SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2542.—VOL. LIV. LONDON, SATURDAY, MAY 10, 1884. PRICE (WITH THE JOURNAL) SIXPENCE BY POST £1 4s. PER ANNUM.

FIRST SILVER MEDAL, ROYAL CORNWALL POLYTECHNIC —Highest Award for Effectiveness in Boring, and Economy in the Consumption of Air

JUBILEE EXHIBITION, 1882.

THE PATENT

"CORNISH" ROCK DRILL.

FIRST SILVER MEDAL, MINING INSTITUTE OF CORNWALL.

FIRST AWARD BORING CONTEST DOLCOATH MINE, DECEMBER, 1881.

Prices and particulars on application to the Manufacturers

HOLMAN BROTHERS,
CAMBORNE FOUNDRY AND ENGINE WORKS,
CAMBORNE, CORNWALL.

ENGINES, AIR COMPRESSORS, TUNNELLING CARRIAGES, TRIPODS, &c.,
From own design, or to order.

THE PATENT

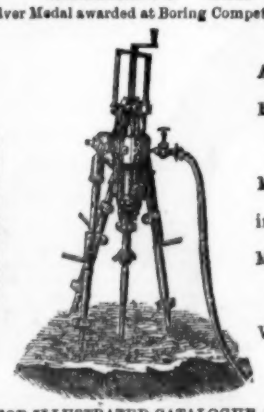
"ECLIPSE" ROCK-DRILL

AND

"RELIANCE AIR-COMPRESSOR."

First Silver Medal awarded at Boring Competition, East Pool Mine, Sept. 1883.

SILVER MEDEL—PARIS, 1878—HIGHEST AWARD



Are NOW SUPPLIED to the ENGLISH, FOREIGN, and COLONIAL GOVERNMENTS, and are also IN USE in a number of the largest MINES, RAILWAYS, QUARRIES, and HARBOUR WORKS in GREAT BRITAIN and ABROAD.

FOR ILLUSTRATED CATALOGUE AND PRICES, apply to—
HATHORN & CO., 22, Charing Cross, London, S.W.

SOLID DRAWN BRASS AND COPPER BOILER TUBES

FOR LOCOMOTIVE OR MARINE BOILERS

EITHER

MUNTZ'S OR GREEN'S PROCESS

MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

LONDON AGENTS—CHARLES MOSS and Co., 2, Rood Lane, London, E.C.

J. S. MERRY,
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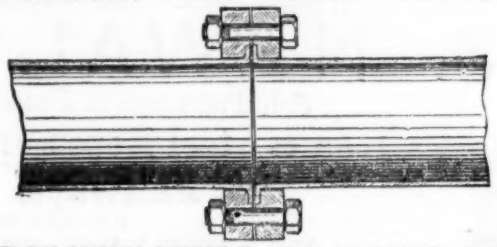
SWANSEA,
SUPPLIES ASSAY OFFICE REQUIREMENTS AND RE-AGENTS.

IMPROVED **INGERSOLL ROCK DRILL** PATENT

MEDALS AND HIGHEST AWARDS.

American Institute, 1872.
American Institute, 1873.
London International Exhibition, 1874.
Manchester Scientific Society, 1875.
Leeds Exhibition, 1875.
Royal Cornwall Polytechnic, 1875.
Rio de Janeiro Exhibition, 1875.
Australia Brisbane Exhibition, 1876.
Philadelphia Exhibition, 1876.
Royal Cornwall Polytechnic, 1877.
Mining Institute of Cornwall, 1877.
Paris Exhibition, 1878.

WROUGHT-IRON STEAM TUBES.



TUBES FOR BOILERS, PERKINS'S, and other HOT-WATER SYSTEMS.

For Catalogues of Rock Drills, Air Compressors; Steel or Iron Steam Tubes, Boiler Tubes, Perkins's Tubes, Pneumatic Tubes, Boring Tubes, and all kinds of Machinery and Mining Plant, apply to—

LE GROS, MAYNE, LEAVER, & CO.
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PERCUSSIVE ROCK PERFORATOR

(IMPROVED)

FOR HAND-LABOUR ONLY,

IN HARD ROCK,

FOR MINES, QUARRIES, AND GOVERNMENT CONTRACT WORK.

RATE OF PENETRATION IN GRANITE,
1½ to 2 inches per minute.

Price £50 complete.

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GLOVER & HOBSON,
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ALBERT IRONWORKS, ST. JAMES'S ROAD, OLD KENT ROAD, LONDON, S.E.,

SOLE MANUFACTURERS; OR TO—

M. MACDERMOTT, 25 and 26, Pudding Lane, London

N.B.—A machine can always be seen at work (without notice) at the Albert Ironworks. [TELEPHONE 4684.]

NEW PATENT

Stone Breakers and Grinding Machinery.

CAUTION TO PURCHASERS.

Do not buy any Stone Breaker or Pulverising Machines until you have seen ours. Price Lists and Testimonials free on application.

A Machine as will break 40 tons per day for £45.

MACHINES LET OUT ON HIRE, OR ON THE HIRE SYSTEM.

Apply S. MASON and Co.,
STONE MACHINE WORKS, LEICESTER, ENGLAND.

MACHINES MADE WITH SECTIONAL FACED JAWS, OR ANY OTHER.

AIR COMPRESSORS,

With R. SCHRAM'S Patent Inlet and Outlet Valves.

BOILERS, TURBINES.

SCHRAM IMPROVED PATENT

ROCK DRILL.

1500 in Use in all Parts of the World.

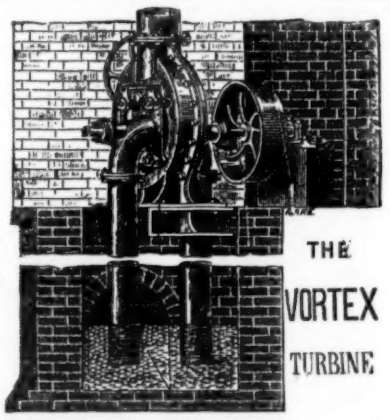
Complete Rock Boring Plants of the most approved construction for Railway Tunnels, Quarries, Shaft Sinking, Level Driving, Stoping, and Submarine Blasting.

All Kinds of Mining Machinery.

ESTIMATES AND FULL PARTICULARS ON APPLICATION.

RICHARD SCHRAM & CO.,
9, NORTHUMBERLAND STREET, CHARING CROSS, LONDON.

GILBERT GILKES & CO.,
KENDAL, ENGLAND,
LATE
WILLIAMSON BROS.



THE VORTEX TURBINE

A most efficient means of applying Water Power to all kinds of Machinery.

Largely used in DRIVING AIR COMPRESSORS, PUMPING, WORKING ORE-CRUSHING MACHINERY, and for other purposes in connection with MINING.

Successfully used in ELECTRIC LIGHTING, and in utilising DISTANT WATER POWER by means of ELECTRICITY.

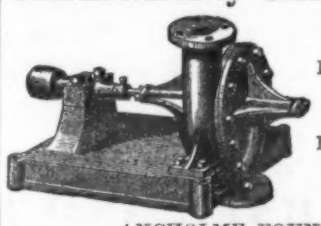
A Pamphlet containing a full description of the Vortex, with several Illustrations and a number of Testimonials, can be obtained on application.

"THE PATENT ACCESSIBLE"

CENTRIFUGAL PUMP

Is the only Pump from which the disc can be removed by breaking the joint on a single face only.

Manufactured by CHARLES L. HETT,
HYDRAULIC ENGINEER,
Maker of
IMPROVED CENTRE VENT,
TURBIN
WATER WHEELS,
Horse, Steam and Wind Power
PUMPS.

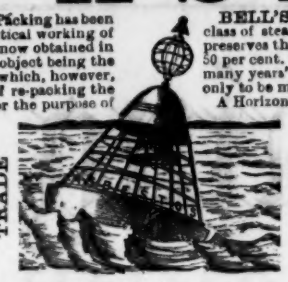


Catalogues on Application

ANCHOLME FOUNDRY, BRIGG, ENGLAND.

BELL'S ASBESTOS.

BELL'S PATENT ASBESTOS BLOCK PACKING, for High Pressure Engines. This Packing has been specially designed to overcome the difficulties experienced by engineers and others in the practical working of engines of the most modern type of construction. The greatly increased skill and workmanship now obtained in the construction of engines and boilers have led to a rapid increase in the working pressure, the object being the attainment of a high rate of speed combined with economical working, the practical advantage of which, however, cannot be realised unless the Packings are so constructed as to avoid stoppages for the purpose of re-packing the stuffing boxes. It is now a recognised fact that the most perfect heat-resisting material suitable for the purpose of a Packing is Asbestos, but to ensure a successful application of this fibre, great skill is required in manufacture. In this Packing the Asbestos is woven into a stout cloth, and owing to the peculiar way in which it is manipulated, great elasticity is imparted to the Packing. This Packing has met with the most unqualified approval wherever it has been used, and on being taken out after about twelve months, working at 70 lb. pressure, it has been found to be in a perfect state of preservation, and was therefore replaced. The Patent Block Packing is square, as Fig. 1, and Figs. 2 and 3 represent the Round Block Packing with solid and hollow rubber core, and Fig. 4 without core, but with rubber inlaid. An Engineer writes as follows:—"The Asbestos Block Packing works splendidly. I have never seen its equal. We keep our gland nuts so that you can move them with finger and taumb, and can maintain a constant vacuum of 28½ in." As these packings are extensively imitated, and as it is a common practice among dealers and agents to supply the cheaper manufactures at my list prices, users are requested to see that the packing supplied to them bears my trade mark.



The goods of this house are of the highest quality only, and no attempt is made to compete with other manufacturers by the supply of inferior materials at low prices. All orders must be sent direct to the undermeationed depôts and not through Agents or Factors.

BELL'S ASBESTOS BOILER PRESERVATIVE. This useful mixture by absorbing the free oxygen that is in the water entirely checks pitting and corrosion. It also disintegrates incrustation so immediately as to prevent its adhering to the plates. Not only is a great economy of fuel effected by keeping boilers clean, but the risk of having the plates burned is thereby obviated. It has been computed that 1/16 in. thick of incrustation causes a waste of 15 per cent. of coal; ⅛ in., 60 per cent.; ⅕ in., 150 per cent. Thus the Preservative avoids the great risks which are inseparable from scaled plates, lengthens the life of a boiler and covers its own cost a hundred-fold by economy of fuel. It is entirely harmless, and has no injurious action on metals. It can be put into the feed tank or boiler, as may be most convenient. Sold in drums and casks bearing the Trade Mark, without which none is genuine.

BELL'S ASBESTOS YARN and SOAPSTONE PACKING

for Locomotives, and all Stationary Engines running at very high speed with intense friction.

The following Testimonial refers to this Packing:—

Festiniog Railway, Locomotive Superintendent's Office,
Portmadoc, January 13, 1883.

Mr. John Bell, 118, Southwark-street, S.E.

DEAR SIR,

I have much pleasure in saying that the Asbestos Yarn and Soapstone Packing gives every satisfaction; indeed, better than we expected. We have a locomotive packed with it, which has been running five months (and think of the piston speed with our small wheels). I think the Soapstone a great improvement, as it keeps the packing elastic, and prevents it getting hard. I am very pleased with its working, and also the very low price for such good lasting Packing. The Asbestos Yarn we find is very useful, and answers admirably. Yours truly,

(Signed) W. WILLIAMS.

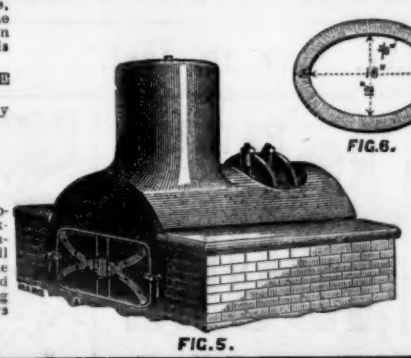


FIG. 5.

FIG. 6.

FIG. 1.

FIG. 2.

FIG. 4.

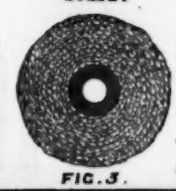


FIG. 3.

BELL'S ASBESTOS BOILER AND PIPE COVERING COMPOSITION, for coating every class of steam pipes and boilers, non-combustible and easily applied when steam is up; adheres to metals and preserves them from rust; prevents the unequal expansion and contraction of boilers exposed to weather; covers 50 per cent. more surface than any other coating, and is absolutely indestructible. It can be stripped off after many years' use, mixed up with 20 per cent. of fresh, and applied again. The composition is supplied dry, and is only to be mixed with water to the consistency required for use.

A Horizontal Boiler, 17 ft. 6 in. long, 15-H.P., gave the following results:—

Temperature on Plates - - - 186 deg.
" " Covering - - 94 deg.

One ton of coal was saved per week, and although the fire was raked out every evening, 20 lbs. of steam were found in the boiler next morning.

The following Testimonial refers to this Covering:—

Offices of the Wimbledon Local Board, Wimbledon,
Nov. 28th, 1883.

DEAR SIR,—It may interest you to know that we save exactly 36 per cent. in fuel through using your covering.—Yours truly, W. SANTO CRIMP, C.E., F.G.S.

BELL'S ASBESTOS and INDIA-RUBBER WOVEN TAPE and SHEETING, for making every class of Steam and Water Joints. It can be bent by hand to the form required, without puckering, and is especially useful in making joints of manhole and mudhole doors; also for large "still" joints where boiling fat and steam have to be resisted. It is kept in stock in rolls of 100 ft., from ⅛ in. (Fig. 6) to 3 in. wide, and any thickness from 1/16 in. upwards. Manhole covers can be lifted many times before the renewal of the jointing material is necessary. The same material is made up into sheets about 40 in. square, and each sheet bears the Trade Mark, without which none is genuine. It is very necessary to guard against imitations of this useful material, and to secure themselves against being supplied with these inferior articles at my price, users are recommended to see that every 10 ft. length of the Asbestos Tape purchased by them bears the Trade Mark.

BELL'S SPECIAL LONDON-MADE ASBESTOS MILLBOARD, for Dry Steam Joints, made of the best Asbestos fibre, is well-known for its toughness and purity, and is absolutely free from the injurious ingredients frequently used to attain an appearance of finish, regardless of the real utility of the material. Made in sheets measuring about 40 in. square, from 1-64th in. to 1 in., and ½ millimetre to 25 millimetres thick. Each sheet bears the Trade Mark.

BELL'S ASBESTOS EXPANSION SHEETING (PATENT).

This Sheeting is another combination of Asbestos with India-rubber, giving to the steam user the special advantages of both materials.

The India-rubber Washer is protected from the action of heat and grease by an outer coating of vulcanised Asbestos Cloth, thus producing an excellent joint where expansion and contraction render other materials unserviceable.

This material is admirably suited to steam pipe joints and every class of valve.

Valves made of this material are very durable, as they are not subject to injury by oil.

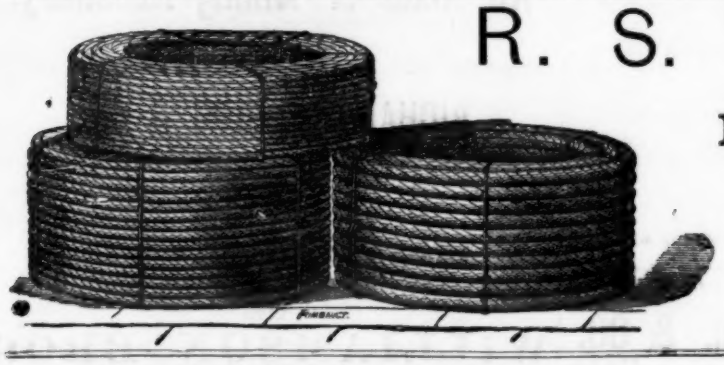
BELL'S "ASBESTOS LUBRICANT."

ILLUSTRATED PRICED CATALOGUE FREE ON APPLICATION TO

BELL'S ASBESTOS WORKS, SOUTHWARK, LONDON, S. E.

OR THE DEPOTS—118a, SOUTHWARK STREET, S.E.,

Victoria Buildings, Deansgate, MANCHESTER. 11 and 13, St. Vincent Place, GLASGOW. 39, Mount Stuart Square, CARDIFF. 21, Ritter Strasse, BERLIN.



R. S. NEWALL AND CO.,

Sole Patentees of Untwisted Wire Rope.

Iron & Steel Ropes of the highest quality for Collieries, Railways, Suspension Bridges, &c.

PATENT STEEL FLEXIBLE ROPES AND HAWSERS.

IRON STEEL, AND COPPER CORDS. LIGHTNING CONDUCTORS.

COPPER CABLES of high Conductivity for Electric Light and Power.

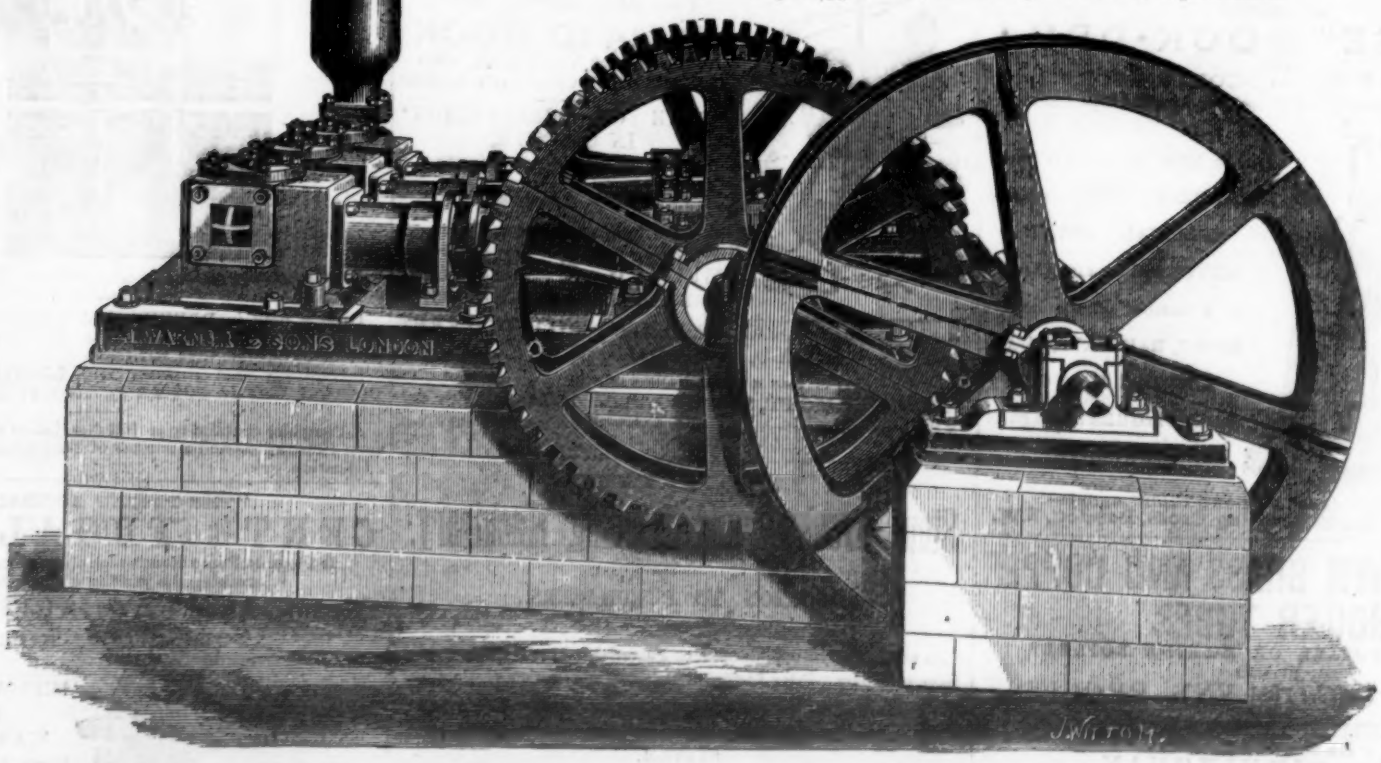
London: 130, STRAND, W.C. Liverpool: 7, NEW QUAY.
Glasgow: 68, ANDERSTON QUAY.
MANUFACTORY: GATESHEAD-ON-TYNE.

WARNER'S TREBLE RAM PUMPS.

To be worked by means of Wire Rope or Gearing.

FOR DEEP MINES OR HEAVY LIFTS, AT LONG DISTANCES.

Prices upon application, with full particulars of requirements.



As supplied to Messrs BOWES, of Springwell Colliery, Gateshead, for a Lift of (600) Six hundred feet vertical through two miles of pipes.

JOHN WARNER AND SONS, THE CRESCENT FOUNDRY, CRIPPLEGATE, LONDON, E.C.

R. HUDSON'S

Patent Steel Trucks, Points and Crossings,

PORTABLE RAILWAY, STEEL BUCKETS, &c., &c.

Telephone No. 14.
In connection with the Leeds Exchange, and all the principal Hotels and places of business in the town.

GILDERSOME FOUNDRY, NEAR LEEDS.

(Near Gildersome Station, G.N.R. Main Line, Bradford to Wakefield and London, via Laisterdyke and Ardsley Junctions.)

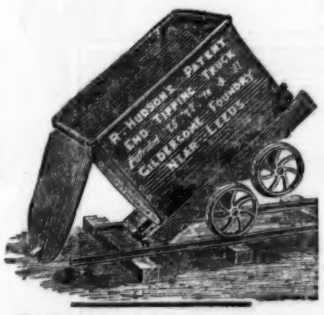
Registered Telegraphic Address:—
"GILDERSOME, LEEDS."
A. B. C. Code used.

UPWARDS of 25,000 of these Trucks and Wagons have been supplied to the South African Diamond Mines; American, Spanish, Indian, and Welsh Gold, Silver, Copper, and Lead Mines; Indian and Brazilian Railways, and to Railway Contractors, Chemical Works, Brick Works, and Coal and Mineral Shippers, &c., &c., and can be made to lift off the underwork, to let down into the hold of a vessel, and easily replaced. They are also largely used in the Coal and other Mines in this country, and are the LIGHTEST, STRONGEST, and most CAPACIOUS made, infinitely stronger and lighter than wooden ones, and are all fitted with R. H.'s Patent "Rim" round top of wagons, requiring no rivets, and giving immense strength and rigidity. End and body plates are also joined on R. H.'s patent method, dispensing with angle-irons or corner plates.

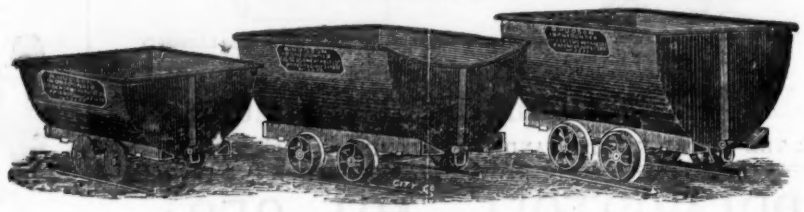
Patented in Europe, America, Australia, India, and British South Africa, 1875, 1877, 1878, 1881, and 1883.
N.B.—The American, Australian, Indian, and Spanish Patents on Sale.

CAN BE MADE TO ANY SIZE, AND TO ANY GAUGE OF RAILS.

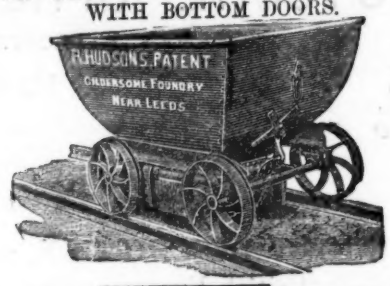
1.—PATENT STEEL END TIP WAGONS.



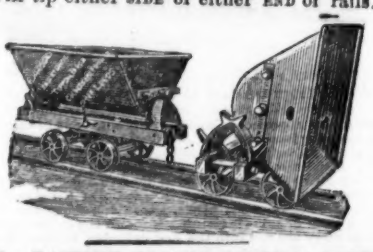
7.—PATENT STEEL MINING WAGONS.



12.—PATENT STEEL HOPPER WAGON, WITH BOTTOM DOORS.

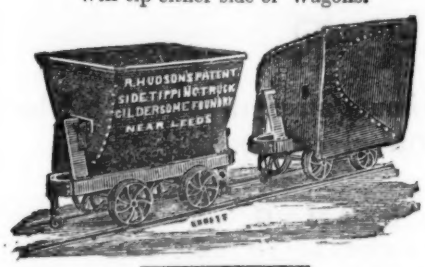


2. PATENT UNIVERSAL TRIPLE-CENTRE STEEL TIPPING TRUCK,
Will tip either SIDE or either END of rails.

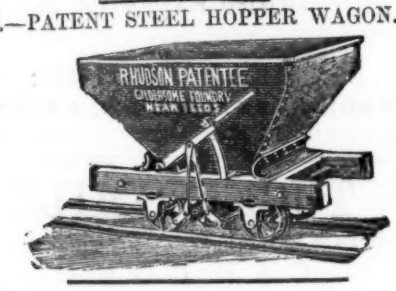


ONE man can EASILY tip ANY WEIGHT in these wagons.

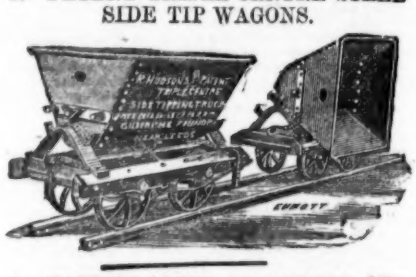
8.—PATENT DOUBLE-CENTRE STEEL SIDE TIP WAGONS,
Will tip either side of Wagons.



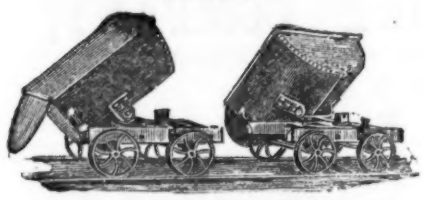
13.—PATENT STEEL HOPPER WAGON.



3.—PATENT TRIPLE-CENTRE STEEL SIDE TIP WAGONS.

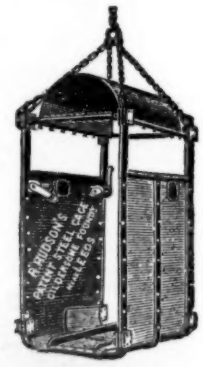


9.—PATENT STEEL ALL-ROUND TIP WAGON.



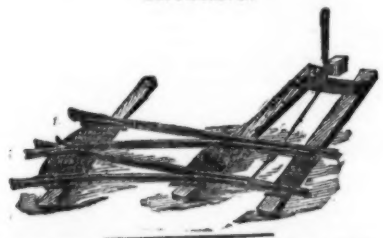
14.—SELF-RIGHTING STEEL TIP BUCKET.
(The "CATCH" can also be made SELF-ACTING if desired.)

15.—STEEL CAGE.

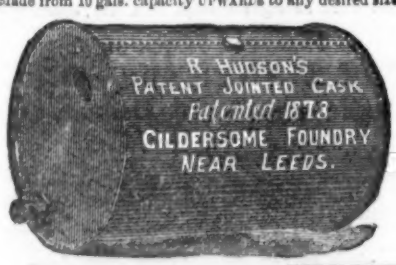


4.—PATENT STEEL PLATFORM OR SUGAR CANE WAGON.

10.—LEFT-HAND STEEL POINT AND CROSSING.



5.—PATENT STEEL CASK.
As supplied to H.M. War Office for the late war in Egypt).
DOUBLE the STRENGTH of ordinary Casks without any INCREASE in weight.
(Made from 10 gals. capacity UPWARDS to any desired size.)



11.—RIGHT AND LEFT-HAND STEEL POINT AND CROSSING.

16.—PATENT STEEL WHEELBARROWS.
Made to any Size.
Lightest and Strongest in the Market.

A great success.

17.—STEEL SELF-CONTAINED TURNTABLE.

(Also made in CAST Iron for use where weight is not a consideration.

6.—ROBERT HUDSON'S
PATENT IMPROVED IRON SMITH'S HEARTH,
NO BRICKWORK REQUIRED.
A Special quality made almost entirely in STEEL, effecting a GREAT SAVING IN WEIGHT.

Large numbers in use by all the principal Engineers in this country and abroad.

18.—"AERIAL" STEEL WINDING TUB.

Largely employed in the South African Diamond Fields.

No. 19.—PATENT STEEL CHARGING BARROW,
DOUBLE the STRENGTH & much LIGHTER than ordinary Barrows

ALL KINDS OF BOLTS NUTS, AND RIVETS MADE TO ORDER ON THE PREMISES

Pumping Engines for Mines, Water Works, Sewage Works, and General Purposes.

CAATLOGUES ON

PUMPING & MINING MACHINERY.

HATHORN, DAVEY, & CO., LEEDS.

Hydraulic Pumps.
Winding Engines.
Air Compressors.
Man Engines,
Capstans,
&c., &c.

APPLICATION.

BRAUN AND BLOEM'S

CELEBRATED

DETONATORS—"EAGLE" BRAND.

TRADE MARK.

The most powerful Percussion Caps for exploding Dynamite, developing its fullest strength.

PACKED IN THEIR PATENT TIN BOXES.

PATENT No. 3665.

A new invention, doing away with the very dangerous operation generally in use of inserting cutting tools when it is necessary to open the outer tin box.

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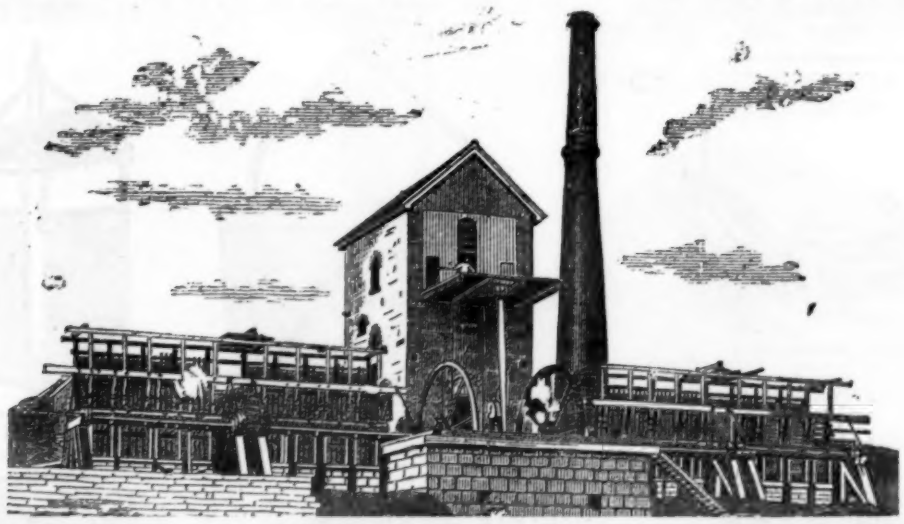

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SILVER MEDAL (HIGHEST AWARD) MELBOURNE, 1881.

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Globe Tube Works, WEDNESBURY,

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FIRST PRIZE, SYDNEY, 1880.

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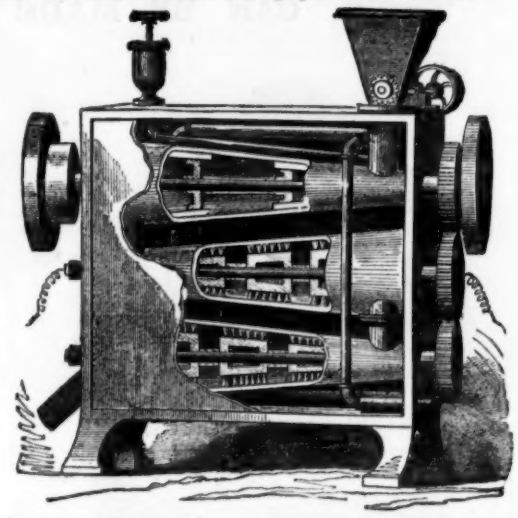
NOVEL ELECTRO METALLURGICAL MACHINE.

PROFESSOR JAMES MANES AND SONS call the attention of miners, mineowners, capitalists, and others interested in the working of gold or silver mines to their new Electro Metallurgical Machine for extracting fine and rusty gold from sands or tailings of stamp mills, or the sands of hydraulic gold diggings, or from the black sands on the coast of Oregon or California, and other parts of the world where gold is found.

The problem that has long troubled the worker of free-milling gold and silver ores is a method to save the mineral now lost in the tailings of stamp mills or flumes. This alone, if it could be saved, would amount to many million dollars profit each year, besides enabling the working of much territory which is now lying idle for want of an economical and thorough process of treatment.



Prof. James Manes and Sons, of Denver, Colorado, U.S., have invented a machine (represented in the above engraving) which it is claimed will save nearly the entire amount of mineral which passes through it, the loss not being over 10 per cent., and in many cases not in excess of half that amount. The machine is a cheap and practical process—it never need stop for charging or cleaning up, being nearly self-acting. Steam, electricity, and mercury are used in the process of extracting the mineral.

This machine or amalgamator is adapted for free-milling gold or silver ores, or refractory after roasting. It consists of a series of three or more large cylinders, wider at one end than the other, placed one above the other in a horizontal position, a shaft or spindle running through the centre of each.

The ore and mercury are fed into the first cylinder, passing into the second, and then to the third. The first cylinder is furnished with steel mullers which nearly touch the sides of the cylinder, and revolve at a good rate of speed, mixing the mercury and ore. The second cylinder is furnished with large steel brushes attached to the shaft or spindle, revolving at a high rate of speed; through this a current of electricity is furnished by a Westinghouse dynamic electro machine, which materially assists in gathering the particles of very fine gold together, and thoroughly amalgamating the metal and mercury. The third cylinder is similarly furnished to the second; into this the amalgam passes, and is again acted upon and mixed by the brushes to catch any gold which might have escaped amalgamation in the second. A fourth cylinder may be used if found necessary.

The amalgamated pulp then passes through a revolving copper drum, plated with quicksilver inside. As the drum revolves it takes up the most part of the amalgamated gold. As the inside of the drum is constantly washed with a spray of water from perforated pipes fixed inside of said drum, a clean-plated surface is constantly brought in contact with the pulp or tailings as it passes out from the cylinders. After leaving the drum it falls down on to incline copper plates, the same as is now used in stamp mills.

The amalgam can be collected from the drum and plates without stopping the machine, and any live quicksilver that passes will be caught in syphons. The tailings are carried off with the water. The machine when attached to the flume will be driven by the waste water; it sifts the fine sands from the coarse gravel, and amalgamates it as above.

The specific points claimed by Prof. Manes and Sons in their patent are—

1.—The saving of almost all the mineral passing through the machine.

2.—The loss being less than 10 per cent.

3.—The entire absence of loss of the amalgamated material, thereby saving all the mercury, which, with the processes now in use, there is a large loss both of mercury and the precious metal.

4.—The small cost per ton at which the ore can be treated.

By the addition of the powerful current of electricity that passes off the revolving brushes, the most minute particles of gold will be caught and retained, which in the ordinary flume and stamps passes off with the water; this often amounts to a large percentage.

The inventors state that if English stock companies will give their assistance to work the black sands of Oregon and California by paying for the building of the machines, they will take a share of the gold for their services, or they will send their machines to any part of the world, or will sell patent rights to those desiring any of their patent machines or revolving furnaces for roasting or smelting ores, ball pulverisers, &c.

Prof. James Manes and Sons are agents for the Morey and Sparey Ball Pulveriser, that crushes and pulverises at the same time, and does as much work as eight stamps in a day, crushing either wet or dry.

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B. A. M. FROISETH, Salt Lake City, Utah, U.S.

Original Correspondence.

NEW SOUTH WALES—150,000 TONS STEEL RAILS.

SIR,—In the *Mining Journal* of Jan. 26 is a reference to the New South Wales Government contracts for the above, and there is no doubt that, all other things being equal, rails manufactured in the Colony will get the preference. As regards deposits of iron ore and coal some of the most extensive of them are on the Western Railway line (extending over hundreds of acres), and any of your readers wishing it may get much valuable information, I believe, as to the whereabouts and surface quantities of the ores, from Mr. E. M. Munford—Mount Edgecumbe, Clarence Siding, New South Wales—who has already opened one iron lode on his property of some feet thick, averaging from the 200 tons already raised over 50 per cent. metallic iron, specially adapted for Bessemer steel. The coal seams, 5 and 9 ft. thick respectively, underlying the iron ores are also first-class for smelting purposes, and wood and water are plentiful.

Oscar Gold Mine.—I see by the report in the Journal of Jan. 19 that the assay of quartz, &c., gives from 5 up to any amount of ounces of gold per ton!! Pray impress upon your readers that this is no real test of the practical value of the mine where it is free gold, for where an assay of that shows, say 20 ozs., it is more likely than not that it will not yield as many pennyweights through the stampers. Where it is pyrites, then, of course, very nearly the assay may possibly be got out of it in bulk, but never with free gold. If England wants to invest her spare capital in gold mines, why not try Queensland, where such results as the following are got?

The Wilmot Extended Gympie crushed 470 tons of stone, yielding 10.944 ozs. of gold. It is probable that a dividend of 20s. per share will be declared. Nos. 3 and 4 Glanmire crushed 580 tons for 460 ozs. of gold. The total crushings at Charters Towers for the month of February have been 3391 tons of stone, yielding 6679 ozs. of gold. The Rockhampton Bulletin to-day published a description of a gold mine at the Dee river, 24 miles from that town. The operations have been kept quiet for some time, and very little is known but that the stone is obtained from two claims on Mount Morgan. The ground is composed of auriferous stone, and all that is necessary to be done is to put in a blast anywhere. It appears that during last year 8591 ozs. of gold have been exported by the owners of the Dee property, and during January and February 3976 ozs.

Sydney, March 26. R. D. A.

P.S.—A telegram received from Brisbane, Queensland, on Sunday, says—The Wilmot Extended Gold Mining Company, Gympie, has declared a dividend of 1*l.* per share, making a total of 58,500*l.* in dividends during the past seven months. This mine has yielded 18,142 ozs. of gold since August last, and still is crushing.

AUSTRIAN GOLD AND SILVER MINES.—No. II.

SIR,—The Romans remained in possession of these Noric mines till after the middle of the fifth century, or until the break up of the Western Empire between A.D. 400 and A.D. 476. With the decline of the Roman power and the political influence of Noricum a change took place, the miners were taken from their peaceful work to oppose the continued advance of the Hungarian and Sclav in the south of the Tauern, and mining was neglected by the inhabitants already weakened by former wars, and the Romans themselves purposely ruined this industry, destroying their workings, plant, and buildings in order that no inducement should exist for the hordes of barbarians to visit the country in search of treasure.

The capital and hill city of Teurnia, which had been in vain besieged by the Goths, as also by innumerable hordes of barbarians who roamed through Noricum in all directions after A.D. 455, was overpowered by the Franks towards the end of the Roman rule, and ultimately fell into the hands of the devastating Sclavs who invaded the country through the Noric Drauthal (Valley of the Drau) at the end of the sixth century. Until this time the Roman custom and language had been maintained in the Möllthal and Drauthal, but now many of the descendants of Romans and inhabitants who had been educated as Romans fled before the fierce invading Sclav to the distant hills, hence the appearance so recently as the middle ages in the hall books of the Bishoprics and Abbeys of Roman Tribulates, Settled Romanese, &c., is accounted for. Long and bloody was the strife in which the Sclavs were engaged, not perhaps with the weak remnants of the Romans (Odcacer withdrew the greater part of those who had escaped the sword into Italy) but with the Bavarians who were though powerful still subject to the Franks. Thasilo, Duke of Bavaria, inflicted a terrible defeat on them (the Sclavs) in A.D. 595, and 20 years afterwards Duke Garibald II. by his victories over them damped their martial ardour, even though they had previously beaten him at Innichen. As before said the frequent incursion and settlement of different nationalities had much effect on the nomenclature, mountains and streams alone retain here and there their celto-Germanic names; such names of places as Vellach, Semlach, Flattach, Kolbnitz, Sagritz, Mörtschach, Döllach, &c., are as certainly of Scalvonic origin as Mühldorf, Winckiern, Teuchel, Stahlhoffen, Falkenstein, &c., are of German.

According to Hacquet (a journey over Noric Alps) a few attempts were made about the year 719 to revive the Roman gold mining industry at Nassfeld, this is said to be recorded on an ancient parchment—"Aurifodinae Romanorum per multos annos in campo humido versus septentrionem desertae vacuere, anno 719 iterum excoli coeptæ sunt." With this exception the mines must have rested until the middle of the eighth century.

The Carinthian Empire of the Sclavs was of short duration. Duke Boruth, hard pressed by the Huns, called in the aid of the Bavarians at Hutsitz about the year 736; they came and conquered, but Carinthia became a province dependent on Bavaria, or rather on the kingdom of the Franks. Peace having been restored, mining from this date made considerable progress, though frequently interrupted by internal strife. In the years 1250-1292 Archbishop Philip, brother of Duke Ulrich and Count Albert and Meinhardt of Görtz, quarrelled, and again in the year 1307 disputes took place between Duke Henry and the Dukes of Austria. The bishops of the time gave the gold mining industry their most zealous support, and at the beginning of the 15th century mining is recorded to have reached a state of magnificent development. Emigrants from Nuremburg, Augsburg, mountaineers from Saxony and Franconia, were attracted by the reputed wealth of the mines, bringing with them not only knowledge but capital. All the neglected workings were again reopened in every valley and mountain, new works were laid out, and a state of mining activity displayed of which at the present day we can form no idea.

In the 200 years dating from the beginning of the 15th to the end of the 16th century mining in Upper Carinthia may be said to have been at the height of its prosperity; gunpowder had come into use, affording the miners advantages not before enjoyed, while at the same time trade, agriculture, and the rearing of cattle was given an impetus in consequence of the increased consumption of the necessaries of life by the enormous numbers of workpeople employed at the mines. The mines at Möllthal appear to have taken the lead in number, size, and productiveness; but unfortunately the records from the Archives of Lienz, Ober-Vellach, and Görtz, having reference to the mining investments of the Görger Counts who were the territorial lords of Möllthal (except the Saltzburg Lordship of Stall), have all been lost, no account remaining of mining events previous to the year 1468, the Counts of Görtz having prior to this made over Möllthal to the Imperial rule.

During the whole history of these mines, however, security was at no time of the best; it happened frequently that the mountaineers of opposite sides of the Tauern fought, attacking each other in turn, slaying the miners, closing the mines, and carrying away with them the stored up ore. The feud-loving miners were always well provided with arms, and a part of them stood always in full panoply; when work was scarce they betook themselves to predatory excursions, and it is recorded that in the time of Frederick IV. that Jörg, the famous miner, and in the adjacent vale of Gastein the knights of Goldegg guarded the golden fleece of the Alps, as did the knights of Goldburg, who had settled near Grosskircheim. It must be evident that under these circumstances, added to the fact that chemistry and mechanics were almost unknown, mining in the district was altogether devoid of a scientific character—indeed, the ground was scarcely more than scratched. Mines were leased and restored like real estates, all of which at last passed to the Crown, who leased them to the workers on tribute.

With regard to the offices and authorities established for the supervision of the mines and the collection of dues "Ployer" says—"Mountain offices were established in the 15th century for the mines of inner Austria—namely, one supreme mine surveyor's office, and one soccage office (mine tribute office?) for the Upper Vellach in Upper Carinthia, the most important mines of inner Austria at this time being there; under the surveyor were all mines of Steurmark, Carinthia, and Krain, and the duchies were divided into 15 mining jurisdictions. The barons and counts of Dietrichstein, the counts of Wittmann and Ortenburg, and the princes of Portia had their own jurisdiction over their property, and drew the proceeds of soccage from the minerals produced upon their lands. According as the mines increased or diminished the jurisdictions were also changed, and sometimes reduced, as in 1620 the jurisdiction of Zeiring and Rottenmann were suppressed and united with the one at Eisenerz. The mining jurisdictions were of first instance, the office of Supreme Mine Surveyor was the Court of Appeal, and the Revisorium was the inner Austrian Court Chamber at Gratz; in addition to these offices there was in Schladming an exchange office, which supplied with money all the mountain offices, and at Klagenfürt and Graz there were mint offices; that at Klagenfürt belonged properly to the Carinthian States, but at the commencement of the 17th century it was transferred to St. Veit, and at last entirely suppressed. The staff in the head surveyor's office consisted of a head surveyor of mines, a counter trader, soccager, assayer, and collector; the head surveyor had a salary of 551 florins and 33¼ kreutzers, the collector had 100 florins, and the assayers 50 florins. The mine jurisdictions (Control Office) consisted of a judge of the mines, a forest reeve, a splint master, a soccager, a secretary of mine courts, a jury, and soccage messenger. At the beginning of the 16th century the personal salaries were—

At Grosskircheim in 1593.		At Steinfeld in 1597.	
Judge of the mines	fl. 100	Judge of mines	fl. 100
Forest reeve	10	Splint master	48
Juryman	5	Forest reeve	10
Secretary of mine courts	23	1 juror	8
Soccage messenger	24	Soccager and juror	16
		Secretary of mine courts	25
		2 jurors	8
		Soccage messenger	24

It would appear that men were appointed to these offices rather for their practical than for their theoretical knowledge, for on Jan. 2, 1597, Frederick Multner was proposed as judge of mines in Schladming, with the condition, whereas he could neither read nor write, a clever clerk of the mines should be attached to him; and later on we read in an account of the religious revolution of a judge of the mines who could also neither read nor write.

On March 2, 1581, when many improvements and additions to the town and fortifications of Klagenfürt were in progress, it is recorded that the inhabitants of the Carinthian States presented a petition to the head surveyor of mines, Hans Huebmayer, respecting Ampross Haintz, the "splinter?" of Steinfeld, in order that he, as they expressed it, should appoint the sawyer for the squares, streets, &c., it is more than probable that these men were altogether destitute of theoretical knowledge, and Klagenfürt has to thank a mountaineer for the most essential part of its beauty and convenience.

It may be argued from the great number of mining jurisdictions in Carinthia, as compared with those of Steiermark and Krain, that mining was carried on with far greater vigour in the former than in the latter two countries. Mining operations for silver and gold appear to have been carried on most actively at Grosskircheim and Steinfeld. In 1446 miners were actively employed at Kloben, Gutthal, Goldzeche, Oexlingzeche, Hirtenfuss, Pilotussee, Modereek, Gossnitz, Grassleiten, Millenten, and Ruden.

In 1541 Kirchberger Brothers petitioned for the free possession of 171 mines, among which were included some on the Goldzeche and Waschgang. We may argue that if Kirchberger Brothers coul'd petition for so many mines in one year that mining in the district must have been most extensive. Grosskircheim lies in the most desolate and barren corner of Carinthia, but contains many large and well-built houses, showing that proprietors of large works must have lived there themselves, and have had their mining and trading offices there also.

There is an ancient and by no means improbable tradition that Saxonburg was built by a colony of Saxons who came to Carinthia to mine for the precious metals. The number of mines in Carinthia extends to thousands. In Schenchenstuel alone, in the 15 years from 1531 to 1546, there were in the circuit of Grosskircheim (now the Winkler circuit) 927 new leases granted for mining and washing works, in addition to 148 for limited periods; many of these fief-grants were made on old neglected mines. Smelting-houses existed in Döllach, in Lomnitzthal, in the Teuchal near Gemund, in Langholz, and in Döllach in the Drauthal. The output of the precious metals at that time was very considerable; but unfortunately exact dates are wanting. Ployer only furnishes us with an incomplete abstract of the years 1528 to 1631 inclusive. The largest output was made during the flourishing period of the Tauern mines from 1460 to 1560. Koch-Sternfeld (the Tauern, page 267) says we may assume that the yearly output at that time in Corinthia, in the Tauern district, amounted to 14,000 marks of gold. In the principality of Saltzburg 4000 marks of gold, and as much again of silver, which noble mass reckoned, according to the present Imperial standard, was worth—the gold, 7,920,000 fls., and the silver 600,000 fls.; or according to the fief-protocol on Austrian footing of the gold mark being worth 336 fls. and 51 kreutzers, it may be reckoned as 6,603,300 fls. for the gold, and 984,000 fls. for the silver, reckoning the silver mark as worth 24 fls. In round numbers, therefore, the yearly output at that time reached 7,000,000 to 8,000,000 of guldens, or upwards of 600,000*l.*

In my next I hope to conclude this historical account. In my first letter on this subject I gave you several extracts from a work written in 1830 by Mr. James Bell. I have since then come across an old work printed by Edward Symon at Cornhill, London, in the year 1721. This work refers to a Dr. Brown who travelled in Hungary, and reports that "he went down a silver mine at Chemnitz" by a ladder with 300 steps, at the foot of which there was an engine which pumped up the water by a wheel, which worked several other engines. They have tubes to let the air in and out at pleasure to prevent the miners being killed by "damps." These mines are very rich, and sometimes yield gold which they separate from the silver by aquafortis. The ore here is covered with white clay, which is called lae-lunae, some of which is so rich that it yields half silver, and in other places they think it will yield 20 ozs. per cwt. Crystals and amethysts are also found here, and near the town here is a high perpendicular rock, part of which is of shining blue mixed with beautiful green and yellow spots, so that it looks like an entire mass of lapus-lazuli finely polished. Glashitten, seven miles from Schemnitz, has a rich gold mine which is lost, the inhabitants having stopped it up when they retired before Bethlehem Gabor, Principal of Transylvania. Newsol lies 50 miles north of Novigrad, is reckoned the third mining town of Hungary, it has furnaces for extracting silver from the copper. Hermgrunde is noted for a rich copper mine which yields 20 to 60 lbs. of copper per cwt. of ore. They produce also white, green, blue, and red transparent vitriol, and that called berg green is used by the painters, here also are stones of a beautiful blue and green, some of which are turquoises; here are two springs which in 14 days' time turn iron into copper, and the worst sort into better copper than that of the ore, which must be often melted before it is useful. Dr. Brown also says that the mine for the number of its passages and workpeople looks like a subterranean city, and that they yield the Emperor 120,000*l.* sterling per annum. There are several other mines in the neighbourhood which are ruined by invasion and neglect.

Dr. Brown says Cremnitz is famous for its gold mine, which has been worked 900 years, and is the richest of the seven in these parts, it is 10 English miles long, has a horizontal passage 170 ft. deep and 800 fms. long, it has six perpendicular pits by which the miners go up and down, one of them is 150 fms. high, they are all lined with planks to prevent the earth from falling in. Most of the veins run to the north-east, and the miners direct themselves by a compass; the gold ore is of several colours, of which the best is white with black spots. They try the ore by washing it after it is pounded in a small river which runs by the town, and is divided into several artificial channels that run continually over the ore and washes the earthy parts from the metalline; there have been pieces of pure gold found here as broad as the palm of one's hand. They convey the ore to the bottom of the pit, from whence it is drawn up in a little chariot with four wheels, with a tongue of iron at the bottom, which, being fitted to a channel of wood cut in the middle of each passage, cannot alter its course, so that a little boy easily drives it before him without any light till he comes to the bottom of the pit, from whence it is drawn up and returns the same way. These chariots carry from 3 to 4 cwts. of ore. Here is also vitriol of several colours, antimony of gold, and several sorts of crystals, and some of them yellow, and there is abundance of gold dust in the hills; here is a mint where they coin ducats and other pieces."

If any of your readers should have come across any old works bearing upon this subject I should feel obliged if they would communicate with me through the Journal. F. KENSINGTON.

Preston, May 5.

TIN MINING—GREAT WHEAL VOR DISTRICT, AND THE MINES THEREIN.

SIR,—Wheal Gwins: This mine is situated in between Polladras Downs and Penhale Wheal Vor, west of the latter and east of the former. It contains five or six well-known east and west rich tin lodes, also two or three of Great Wheal Vor cross-courses. It has long been considered the gem mine of the district. Some of the lodes have been worked extensively to a depth of only 35 fms., principally by tributers; but whether any record of the sales have been kept I have no knowledge. Polladras Downs is situated, as before said, to the west of Wheal Gwins; its southern boundary adjoins the northern of Trueman's. It is a large grant, and within it are seven or eight east and west parallel lodes, also three or four of the Great Vor cross-courses. About three years ago a friend of mine in London, who has since gone over to the majority, allowed me to read some reports on this mine. The late Capt. Charles Thomas, of Dolcoath, said in his report—"The geological condition of Polladras Downs were similar to the Great Wheal Vor. The district is the richest for tin in the kingdom. The mine is shallow, only 110 fms. deep. Put the mine to work and prepare for 80 heads of stamps." Capt. James Pope, of Wheal Basset, said in his—"I worked in Polladras Downs as a miner several years. I do not hesitate to say this is one of the best tin mines in Cornwall, having many lodes unexplored, from all of which large quantities of tin may at once be expected, and an 80-in. engine is ample power to drain the water and work all the lodes. Capt. Joseph Prisk, of Wendron, said—"With ample capital and economical management I have every confidence that those embarking in this mine will, in a short time, be richly rewarded." Another, but I forget the author, said—"When this mine was last at work there were nearly 70 miners working on tribute at an average of about 10s. 6d. in 1*l.* Black tin was then at 38*l.* to 40*l.* per ton; it is now over 50*l.*, and likely to go higher, and taking this into consideration also, all the improvements in mining, such as rock-drills, explosives, winding, increase in the labour done by miners now and 49 years ago, 6s. 6d. in 1*l.* would be a good price for what then cost 10s. 6d. to explore. It is an easy ground mine to work as the levels were driven for from 70s. to 100s. and the shafts sunk from 20*l.* to 25*l.* per fathom."

Why, I ask, are these mines—Wheal Gwins, Polladras Downs, and Trueman's—not at work? They cannot fail to pay handsome profits for a very long period.—*May* 6. HENRY H. HESTER.

P.S.—Tin has gone up 2*l.* per ton since my last, and will, I think, soon make another upward movement.

GREAT WHEAL VOR DISTRICT, AND MINES THEREIN.

SIR,—My attention has been called to the letter of Mr. Hester on this subject in last week's *Mining Journal*. I have read that gentleman's remarks on the mining prospects in North Cornwall with considerable interest and pleasure, particularly as they fully confirm the opinions I have long entertained regarding the neighbourhood in question. It may interest Mr. Hester or your readers to know that I am the proprietor of the Carleen sett, better known under the name of the West Vor Mine, which immediately adjoins the Great Wheal Vor, through which run the same lodes—the Trueman's, the Vor Main, the Sozen, and the Metals. The above setts are almost in their maiden state, and from many independent and official reports in my possession, from well-known mining engineers, I have every reason to believe that with a moderate amount of capital, judiciously expended, this mine would yield a return equally splendid to that of the famed Great Wheal Vor. In consequence of the depression from which all mining has suffered during the last few years I have simply kept the concern going in a small way, pending an opportunity to transfer the property to a syndicate or company with adequate means to develope the undertaking, my own means not being sufficient for this purpose. Mr. Hester is correct in his surmise that I am now taking some steps in the matter, but as yet it is premature to reckon upon the result. I subjoin copies of reports from Capts. S. Harris and S. J. Noell, and should feel obliged by your kindly inserting them.

Capt. S. Harris, West Vor Mine (Nov. 1, 1883), writes:—During my connection with the mine our operations have been confined to exploring the adit level, in which we have discovered and opened on two large well-defined lodes producing tin, copper, and arsenic, with every indication of being highly productive in depth. These lodes are known as the Great Wheal Vor main lode and the Sozen lode. They are about 15 fms. apart, parallel to each other, but the Sozen having a flatter underlie, the main lode will form a junction at about 40 fms. below the adit level, which was the case in the adjoining mine, Great Wheal Vor, where a continuous course of tin was prosecuted 300 fms. deep. The Carleen lode, 30 fms. north of the main lode at the adit level, is worked to the 120 level, and produced large quantities of tin and copper. This lode being more perpendicular than the others, would intersect them at about the 140 at about 20 fathoms below the present bottom of the old mine, a most desirable point to reach. We have sunk winzes in the bottom of the adit as deep as the water would allow, and found the lodes increasing in value, which is characteristic of the district. What we have done may be termed preliminary work to the more extensive development of the property. The first junction of lodes—that is, the Great Vor main lode with the Sozen lode—could be reached in sinking 40 fms. below the adit level, which could be done with a small engine at a cost of about 5000*l.*

We have fully 1000 tons of tinstuff at the surface, the production of our operations, ready for the stamps as soon as erected, which would materially assist the expense of further development. But the better way to work the mine would be to put a large engine in the house now on the mine, which is a most substantial one, suitable for an 80-in. engine. By fixing an engine here the water could be at once drained to the bottom of the mine, from which good returns could be at once made.

I do not know of another such speculation in the county, and I hope soon to see it in operation. I have every confidence in its great success. I estimate the cost of all necessary erections would be about 10,000*l.* or 12,000*l.* This sum is apart from any development of the mine, great part of which, I calculate, would be self-supporting; so that, with a working capital of (say) 30,000*l.*, great results could be anticipated. The mine, I may observe, is situated immediately to the west and adjoining the Great Wheal Vor Mines. All the Vor and Wheal Metal lodes traverse the entire length of West Vor sett (fully a mile). One lode only has been worked in this sett to any extent—the north lode, which has been worked to the depth of 120 fms, below the adit. I have examined the different lodes at and above the adit level, and consider them all to present great promise for the production of large quantities of mineral in depth.

Capt. S. J. Noell, Gwinear, Hayle (April 29), writes—At your request I have this day carefully inspected the West Wheal Vor and Metal Consols Mining Company (Limited) property, and have come to the conclusion that, looking at the extraordinarly large and masterly Wheal Sozen lode, opened up but a short distance at the adit

level, and now yielding saving work for tin, there is every indication of its being highly productive in depth, especially at the junction with the Great Wheal Vor main lode, say, about the 50. The sett is immediately to the west of Great Wheal Vor, one of the greatest and most profitable tin-producing mines ever discovered in Cornwall, or I may say anywhere else. The north lode, referred to in the sett, has been worked upon at the 120 below the adit, and has yielded very large quantities of tin. The sinking of this shaft—say, 20 fms. below the present bottom—would reach the junction of all the lodes referred to, and should it prove only half so productive as it did in Great Wheal Vor, east of the flookan or clay-course, it would richly repay every investor, leaving out of the question the other more than probable results to be derived from other important points of the sett. I might write without end as to what I have seen as a workman, an agent, and as a shareholder in the different mines worked east and west of the flookan or clay-cross referred to, and the extraordinary mineral wealth they have yielded, but none of those properties can excel the position of the West Wheal Vor and Metal Consols. This sett is, in my opinion, one of the best in West Cornwall, and if only worked with spirit and determination cannot fail to be a success to the shareholders. I knew, and was intimately acquainted with, a gentleman who realised over 60,000*l.* in one of the properties east and west of the before-mentioned flookan or clay-course. To place the mines, therefore, in an efficient and effective state of working, and to sink and lay it open in a miner-like manner, will require the erection of the machinery, &c., recommended by Capt. Harris, and this done there can be no doubt of the speculation being one of the very best that has lately been offered to the public.

I may also state that I have similar favourable reports from Capt. Josiah Thomas, of Dolcoath Mine; Capt. W. R. Ratter, of West Seton Mine; and Capts. James Jenkins, William Bawden, William Argall, and others.—*Fortis Green, May 7.* P. ASPINALL, Jun.

CORNISH MINING, AND ITS PROSPECTS.

SIR,—One of the most pertinent questions at present occupying the attention of capitalists is how and where to invest with the prospect of reasonable remuneration. One result already apparent is strongly exhibited in the desire to become better acquainted with the facts concerning the resources of home mining; and all who desire to secure for it the position it deserves, as a medium for investment, must be gratified at the progressive advance in the price of metals, affording scope for the employment of capital in such a way as to secure large profits for those whose selections are founded on the real merits of the mines they embark into. When we take, for example, half a dozen mines, selling in the aggregate for less than one mine has been forced up to, and each one of the six mines presenting far greater prospects of early success, it becomes an enigma in mining valuation of which the mysteries of share jobbers can only give a solution. Many mines are ignorantly managed, and before parting with their money investors should be fully advised as to the extent and depth of development and ore discoveries to form a correct opinion of their present and prospective value. The present is a favourable opportunity for buying shares in well-managed low-priced mines, and compares favourably with this time five years ago, when I wrote in the *Mining Journal*, drawing attention to some few mines. Their progress and prospects I had then carefully watched, since which more than a quarter of a million sterling profit has been divided from them, and they now represent a market value of more than 300 per cent. above what they then sold for, which cannot but be considered a brilliant realisation of that prediction. CHAS. BAWDEN.

May 7.

LEAD.

SIR,—In an able and exhaustive report on the mining and metallurgical industries of the German Empire Dr. Adolf Gurlt, of Bonn, states the quantity of lead and lead ore raised in Germany. The annual production of lead in the German Empire has, he says, continually increased for many years; it is derived exclusively from lead ore raised in the country. The quantity of lead ore produced was in—

1880—Tons.	1881—Tons.	1882—Tons.	1883—Tons.
159,726	164,771	177,659	169,150

By far the largest amount of this output is due to Prussia, which, for instance, in 1882 raised 157,235 tons of merchantable lead ore, worth 19,469,870 marks at the place of its origin. This quantity comprised 24,256 tons from Upper Silesia, 33,799 tons from the Harz Mountains in Hanover, and 99,179 tons from Rhineland, Nassau, and Westphalia. The rest of 20,424 tons falls almost exclusively to the share of the Freiberg district, in the kingdom of Saxony, including Brunswick and Bavaria. The principal ore is argentiferous galena; carbonate of lead is only produced in minor quantities. It is from these lead ores that the greater part of the silver is derived in Germany, whilst the copper ores contain the rest, as we shall see presently when mentioning the precious metals. From these ores metallic lead was smelted 85,928 tons in 1880, and 86,729 tons in 1881. There was a slight falling off to 85,860 tons in 1882; but a recovery to 94,930 tons in 1883. Including litharge, 3923 tons, 4514 tons, 4170 tons, and 5044 tons respectively; representing at the works a total value of 26,513,500 marks, 25,238,400 marks, 26,080,000 marks, and 23,732,250 marks in the several years.

Of this production the share of the Mechernich Mining Company in 1883 was 25,582 tons; Stolberg Company, 13,753 tons; the Harz Works, 21,624 tons (including 11,276 tons of litharge); Upper Silesian Works, 16,658 tons (including 1943 tons of litharge); Freiberg Works, in Saxony, 5732 tons; Remy, Hoffmann, and Co., in Nassau, 5672 tons; the Rhenish Nassau Company, 6388 tons; whilst the rest divides among A. Ponsgen and Sons, the Commern Leadworks, and Goldschmidt in Nassau. The price of German lead which had from January to December, 1882, experienced a decline from 310—306 marks to 300—290 marks, or from 10—16 marks per ton, followed the downward tendency of the general metal market, and ended in December, 1885, with another loss of from 50—55 marks, owing to over production at home, and to the powerful competition of the leadworks in Spain and the United States.

Nevertheless some of the better situated works managed to earn a dividend—as the Mechernich Company, 15 per cent.; Stolberg Company, 6 per cent. for preference, and 1 for ordinary shares; Rhenish Nassau Company, 2 per cent., &c. The position of the leadworks is, however, a rather difficult one, and they await anxiously better prices for their produce. The Government works of the Harz, Silesia, and Saxony were able to realise a fair profit by dint of the utmost economy, and of considerable technical improvements in mining, dressing, and smelting of the ores which they either raised on their own account or bought from neighbouring private mines.

It may be necessary to remark that the value of a mark and a shilling are identically the same, hence marks can be reduced to pounds sterling in the usual way. It will be observed that the plumbiferous sandstone of the Mechernich Mines alone yielded in 1883, 25,582 tons of metallic lead, and managed to pay a dividend of 15 per cent. on its capital.—*London, May 6.* B. M.

PRICE OF LEAD.

SIR,—Referring to my letter of April 24, which you were kind enough to insert, may I again ask you to afford me a little space? Your correspondent "Reciprocity" evidently goes out of his way to criticise. He fears I have studied statistics to little purpose, and wishes to know if I am "lead blind." I think I can confidently inform him that neither is the case. He censures the following part of my letter:—"I am of opinion that there is no cause why the price of lead should be so unremunerative." Yet in the beginning of his letter he says: "'L. D. R.' is quite right in failing to see anything disastrous in a rise in the price of lead." If he agrees with me that there is nothing disastrous, perhaps he will tell me his reason, cause, or motive why prices should not be advanced, although from his letters I have understood he advocates fairly remunerative prices. If I had written that I do not see the cause of prices being low "Reciprocity's" criticism might be applicable; but I must take it that his thirst for so doing blinded him as to the correct meaning of my short letter. With regard to a protective duty, we know that would remedy matters so far as many are concerned; but we also know it is beyond our reach at present, and it should not be forgotten that although the Spanish and German lead depresses our market, still I believe I am correct in saying that most of the Spanish mines are in the hands of English capitalists; so that "Reciprocity" would assist one class of shareholder to ruin others. Now my idea is that a meeting could be arranged, and result in general satisfaction. "Reciprocity" is very ready to let us know which way the market is going, but I think he might take a lesson from the Chairman of one English lead company, who, quoting from Artemus Ward, says: "You should never prophecy until you know."

I trust your readers who see my letter, and are interested in this subject, will forward their views, and support any movement made for improving the market.—*Palace Club, May 8.* L. D. R.

ROMAN GRAVELS MINING COMPANY.

SIR,—I notice the meeting of this company, with Mr. Tufnell Southgate in the chair. Mr. S. is also a director of Leadhills, so he "calls for his fiddlers three." They are not happy; they call for a reduction of lordship. Why? The lordship is 1-12th, and he says they are entitled to the other 11-12ths as profit. No wonder he isn't happy. He calls upon the captain; but the captain is not up to his usual form. He does not babble about Minera Hills or the prospects of mining matters; all he has to say is that farmers in the neighbourhood thought they had a liberal landlord. He next calls upon the retiring director; but he also is dull, and can afford no more information than that they had paid their rates and taxes, and had put up a 60-in. engine, instead of a 40 in.

Why don't these people get their mines valued, and ascertain really how they stand? It may be they have not 10,000*l.* of stuff in the whole concern. I notice the report of the Weardale Mines; I think Mr. Tufnell Southgate is a director there. I wonder what story he will have to tell at the next general meeting. I suppose he will be able to say that the promoters got their 6000*l.*

Glasgow, May 8. R. T. M.

FLAGSTAFF DISTRICT MINING COMPANY.

SIR,—Will you permit me to address, through your columns, the shareholders in the Flagstaff District? A petition has been presented to the Court against this company. The petitioner is the secretary, and I believe the claim he has is only some 60*l.* for salary due. I have made enquiries, and find the company owe only 200*l.* here and in America. This is nothing to drown a company like the Flagstaff. I am assured by friends in Utah that the Flagstaff is considered there to be a very promising company, and can be worked cheaper than any other mine on the Emma Hill.

I have submitted a plan to the directors for raising new capital. My plan is to call a meeting of the shareholders, and to pass a resolution authorising the directors to increase the ordinary capital by the issue of 150,000 new shares of 1*l.* each., the directors to be empowered to issue such new shares at 2s., each share being credited with 18s. paid up thereon. This plan was adopted by the Kapanga shareholders a few weeks ago, and 50,000 shares were applied for on similar terms. I believe if a like issue of new shares was made by the Flagstaff there would soon be ample capital for going on with the workings. I have also written to the Flagstaff directors asking them to call a meeting, as I consider the shareholders ought to be consulted oftener. Perhaps some of the London shareholders will call round at the office and stir up the directors. It is time they were stirred up by somebody. Private information from Utah leads me to believe that there is a great future in store for the Flagstaff, but it needs good management on this side.—*Barnstaple, May 8.* JOHN B. JONES.

[There can be no question that this system of raising capital is of very little advantage to those adopting it, and is permanently prejudicial to mining. If it has been proved that the expenditure of 100,000*l.* has earned nothing per cent. as dividend for the 100,000*l.* capital, how can the 8000*l.* or 9000*l.* working capital now sought be expected to earn dividends worth having on 185,000*l.*? As to the Flagstaff concern, so much British money has been sunk in it without any return, and very little prospect of return, that the sooner it is wound-up and forgotten the better it will be for those who have supplied capital and for the reputation of Anglo-American mining. The secret of success in mining is the possession of courage to sacrifice money sunk in unremunerative adventures, relying on the average for the profit which is then large.]

THE BANKRUPTCY OF P. W. THOMAS, SONS, AND CO.—The case of Blakeway and Thomas has this week again been before Mr. Registrar Pepys in the Bankruptcy Court. The firm is well known by name to the readers of the *Mining Journal* from the circumstance of the late Mr. Thomas having been the most active litigant in the celebrated South Frances and West Basset boundary dispute case; but the losses do not appear to have been connected with mining speculations. Blakeway has absconded, and an approximate statement of affairs, prepared by Thomas with the assistance of Mr. Whinney, the special manager, discloses unsecured debts to the amount of 350,843*l.*, debts fully secured 74,334*l.*, and debts partly secured 709,553*l.* (the securities being valued at 347,133*l.*); assets 80,209*l.*, in addition to an unascertained claim upon the executors of the late Mr. W. A. Thomas. The bankrupt states that it is impossible for him to furnish an accurate account of the deficiency, but the losses of the firm by speculations on the Stock Exchange since 1881 were known to exceed 600,000*l.* The transactions had been carried out by Blakeway without his (Thomas's) knowledge, and the books contained no record of them. Mr. W. F. Baker appeared for the trustee, Mr. Aldridge for the official receiver, Mr. H. Read for the bankrupt Thomas, and Mr. Attlee represented creditors.

Upon examination by Mr. Baker, the bankrupt stated that the firm suspended payment on Jan. 30 last. He became a partner in the firm in 1878. The business was then carried on by his father and Mr. Blakeway, and he joined them. The firm had been established upwards of 100 years. He and Blakeway were first cousins. His father had been 50 years a member of the Stock Exchange, and had been 25 years on the committee. He died in 1879, and had ceased to take any active part in the business for a year or two previously. During his father's lifetime he (the bankrupt) did very little but clerk's work, and did not even get in the partners' room. The business was a very large and lucrative one, comprising investments of all kinds and a large loan business. Blakeway had the entire management of the loan business, and managed it even during the lifetime of Mr. Thomas, sen. On joining the firm he took one-eighth of the profits, which was increased to one-half at his father's death. He then took charge of the correspondence and of the office as regarded the investment business. He had nothing to do with the loan business, and very little with the bargains of the firm on the Stock Exchange. His work was principally confined to the superintendence of the office and to the large correspondence with country clients. There was a fortnightly settlement on the Stock Exchange, and on the settling day, on Jan. 28 last, Blakeway was in attendance as usual, but he had not seen him since. After his father's death accounts were taken between the executors and Blakeway, and it appeared from the accounts rendered by Blakeway that nearly 20,000*l.* was due to the executors. He now heard, to his great surprise, that the accounts were fictitious, and that large securities alleged to belong to the firm had disappeared. The executors (he being one) had every confidence in Blakeway, and relied upon the truth of his statements. He (Thomas) married in 1880, and was then under the impression that he had an income of 5000*l.* a year. He made no settlement upon his wife beyond a life policy, as he did not wish to take anything out of the business. They did not live extravagantly—being desirous of saving money—and their expenditure did not exceed 1500*l.* or 2000*l.* a year. The securities were under the charge of Blakeway, he having the key of the safes, one of which was kept at the office and the other at the Stock Exchange. His mother had a large amount of securities in the custody of the firm, and about 25,000*l.* worth of them had disappeared. When his father died he was supposed to be worth nearly 100,000*l.*, including 30,000*l.* shown to be due to his estate in the accounts rendered by Blakeway.

By Mr. Attlee: He had not had any communication with Blakeway, either directly or indirectly since he absconded, and had no idea where he was. The nominal capital of the firm was 5000*l.* So far as he knew, only the legitimate business of stockbrokers was carried on by the firm. According to the rules of the Stock Exchange a broker could not also be a dealer.

By Mr. Baker: The 5000*l.* was defined in the partnership deed simply to regulate the division of the profits. It was the nominal capital, but the firm had a very large amount of stocks and shares which were used in the business. It was part of the legitimate business of stockbrokers to hold stocks and shares for the purposes of a loan business.

Mr. Baker said that the books under the control of Thomas, in relation to the investment business, were all in order, but the securities registry kept by Blakeway had disappeared. Thomas had been examined, and also the clerks in the office, on various occasions, and it was clear that he was the innocent partner. The trustee and committee of inspection were therefore willing that he should pass his examination.

The bankrupt passed accordingly, and it was stated that he would remain in the country in order to give all the information and assistance in his power. The late Mr. W. A. Thomas was much respected by all connected with mining, though his foolish obstinacy in the litigation mentioned was generally acknowledged, and his son has the sympathy of most of those who have done business with the firm, although they may be creditors.

FOREIGN MINING AND METALLURGY.

Business has remained dull in the French Iron Trade, and transactions have been carried through with difficulty. On the one hand the proprietors of works appear resolved to make an effort to advance their rates; but, on the other hand, merchants are still selling iron at 6*l.* per ton. Merchants thus appear to have no confidence in an upward movement in prices, and in presence of the feeble tone of the iron trade in the principal metallurgical districts of the Continent, we can scarcely be surprised that this should be the case. The French steelworks are beginning to suffer from an excessive production, and from the competition which is the result of it. French industrial journals have been suggesting the formation of a syndicate with a view of coming to an understanding with the Anglo-Germano-Belgian combination for maintaining prices, or, if no friendly understanding can be arrived at, of competing with English, German, and Belgian firms. Labour and raw materials are, however, too dear in France to allow of French firms entering upon such a competition. A firm tone which has prevailed in the German iron trade for several weeks past has been succeeded by a feebleness which has effectually chilled and dissipated all ideas of an advance in prices in Westphalia. The German rolling mills are already provided with pig for the second quarter of the year, so that the deliveries of the blast-furnaces are again falling off. Bessemer, spiegel, and casting pig have been sensibly neglected of late. The German rolling mills have still plenty of work, but the demand has experienced a check, and fears are entertained as to the future. Plates have been in increased demand, but the production is at the same time very large, and this has checked any upward movement in prices.

Enquiries as to prices reach Belgian ironmasters frequently enough, but they do not result in the conclusion of much actual business. For every industrial establishment which is well off for work there are at least two which are scarcely doing anything. Under these circumstances, whenever a contract presents itself, the weaker works show an eagerness to undertake it at almost any price; and this, of course, has a tendency to prevent any improvement in quotations. It is clear that there must be a considerable increase of business before prices can have any chance of rising. Stocks of pig are increasing in Belgium, notwithstanding the reported extinction of two blast-furnaces, and they now amount to about 100,000 tons. This accumulation is heavy enough to prevent any advance in rates for some time to come. Another furnace is expected to be blown-out to-day (Saturday), and it is hinted that it will not be re-lighted until the situation has undergone such a change that a rise of from 10 to 20 per cent. in prices admits of production being effected at a profit. Prices have been, to some extent, nominal of late, but we may note that English pig has made 2*l.* 3s. 9d. per ton. Luxembourg pig has been firm, at 2*l.* 2s. 6d. per ton. Iron has remained nominally at 4*l.* 16s. per ton, but business would be done below that rate in the case of any transaction of importance. The nominal quotation for No. 2 has been 5*l.* 2s., and for No. 3, 5*l.* 8s. per ton. The best houses have maintained girders at 5*l.* per ton. No. 2 plates have not exceeded 6*l.* 4s. per ton, and No. 3, 7*l.* per ton. Plates of commerce have barely maintained a quotation of 8*l.* 14s. per ton.

The condition of the Belgian Coal Trade has not experienced any important change. Ordinary coal has been in fair demand, but coking coal has been more and more neglected. Coal for metallurgical purposes has also shown considerable weakness. Coke has been quoted from 9s. 6d. to 10s. 10d. per ton, but the demand has been very inactive. The movement of coal over the Belgian State Railways has been larger of late than it was a year since. In the week ending April 27 the number of trucks carrying coal and coke which passed over the system was 16,803, as compared with 15,276 in the corresponding seven days of 1883. There has been scarcely any change in the general tone of the German coal trade. A convention of Westphalian coalowners has not yet been held as proposed, the number of adherents not having been sufficient to represent nine-tenths of the production. At present only 70 per cent. of the coalowners have given in their adhesion, but it is hoped that in a few weeks those who still hold back will join the majority of their *confrères*. An adjudication has just taken place at Elberfeld of 210,000 tons of locomotive coal and 5000 tons of forge coal. The lowest tender submitted for the locomotive coal was 4s. 6d. per ton. The production of coal in the Dortmund district in the first three months of this year was 7,072,779 tons, as compared with 6,833,268 tons in the corresponding period of 1883, showing an increase of 239,511 tons. The stock of coal on hand stood at the commencement of the quarter at 120,630 tons, and at the close of the quarter it had increased to 175,769 tons.

REPORT FROM CORNWALL.

May 8.—There has been no material change in the aspect of mining affairs, for little importance is to be attached to the small fluctuations that have taken place. The general course of business seems to be sound, and the prospects good, still it is evident that we were right when we doubted the wisdom of taking too sanguine a view. It will require a further advance in the standards before the market will wake up to really general and healthy activity.

There are two ways of regarding the information conveyed to the Mining Institute through the medium of Mr. Vale's paper concerning the prospects of tin production in Australia and its influence upon Cornish mining, and both of these were followed, though not to the same extent, in the course of the discussion at the meeting, and have been repeated in the wider out-of-door discussions that have taken place since. It is, in fact, very easy to regard the statements made as satisfactory or the reverse. Everything depends upon our starting point. For one thing there seems to be very little doubt that the best case was made out for the colonial producers that it was possible to make. We may take it for granted that we know the most that is known of the capabilities of Australia for continuing the competition. There may, then, very probably be some allowances to make for the sanguine manner in which some of the Australian prospects were set forth, but upon the whole it is best to take them as they stand.

Putting Australia at the best and Cornwall at the worst, what can we make of the comparison? Well, it is quite certain, for one thing, that those who looked forward to an exhaustion of the Australian resources are mistaken. Australia is likely to produce tin for many years to come; and to that extent, therefore, the paper may be deemed unsatisfactory. But to stop there would be to take a very superficial view of the whole question. If the competition is to con-

tinue, it is abundantly evident that the stream works are approaching exhaustion, and that they may very soon be out of the field; and this is really what we have first to look to. What we have always contended here is, that it is idle to expect deep mining in Cornwall to compete with streaming in Australia. But the tables are turned directly Australia has to fall back upon mining. Were it even the case that the tin lodes of Australia were as numerous and as rich as those of Cornwall (and we have the most ample and satisfactory assurance that they are not), there are conditions which make even deep mining at home, so far as actual working is concerned, able to compete on very fair terms with comparatively shallow mining abroad; and the longer Australia has been engaged in tin mining, as distinct from streaming, the better will our comparative position be. We are not all surprised, therefore, to find that there is a very general feeling expressed since the paper and discussion have been made generally public that the prospect, on the whole, is fairly satisfactory.

Not that we see any objection to a contrary view being held here and there. When the statements made in a paper of this kind lead gentlemen to see the necessity of doing all in their power to relieve Cornish mining of its unnecessary burdens, that of itself is no slight gain, and we should be sorry if a more sanguine feeling were allowed to disappoint the expectations naturally raised by such remarks as those of Mr. Bolden. It is a fact that half the difficulties of home mining at the present day have no real connection with the necessary conditions of mining operations; and that these difficulties do not exist as regards our foreign or colonial competitors. If our native industry were crushed out of existence, then there would be no question about the means to be taken for its revival, and the removal of all impediments to its free activities. But it surely is not needful to wait until then?

As a thoroughly practical contribution to this discussion we must make special note of Capt. Bishop's remarks upon the jigging of tin. Everybody accepts the view that tin dressing can be improved and cheapened, though there is a difference of opinion as to the ways and means. And there is no doubt that the jigging arrangement deserves far more attention than it has received. We shall now have the opportunity of profiting by Capt. Bishop's practical investigation of Capt. Southey's process.

It is understood that the proposal for the amalgamation of the Miners' Institute and the Miners' Association has been practically adopted, though formalities have yet to be observed and details to be considered. When the objects and general aims of two societies working in the same area, among the same classes, and supported by what is practically the same body or friends, are really one and the same, there is no adequate reason why they should continue a separate existence. And here there is really no wish that they should do so. Whether this species of union, which so decidedly gives strength and developes wider activities, can be carried further in the country, is a point on which we are doubtful; but so far there can be no doubt whatever, though it will not be an easy thing to settle the conditions, and give the new association the best possible start. The Western Daily Mercury shadows forth great things, but things that are by no means beyond the power of the county:—"Each institution is a necessary adjunct to the county, and should the two bodies come together and take over the magnificent science and art schools at Camborne and Redruth, they would unquestionably become firmer and more popular—firmer because the combined financial and influential support would be great; more popular because the organisation having wider ramifications, there is every reason to believe that those students who have been in the habit of obtaining theoretical knowledge at Jermyn-street, and going elsewhere to obtain practical knowledge, would come direct to Redruth or Camborne, and learn theory and practice at one and the same time. The school in Jermyn-street has been discontinued, and students are now at South Kensington, but it is said that the accommodation there is not satisfactory, and it is to be remembered that young men from foreign countries study mining in London. We believe Prof. Warington Smyth is highly in favour of the amalgamation of the two bodies, believing there would be excellent results. In Mr. Berringer the classes have a gifted science teacher, and although an art teacher has been at work for several months only, Mr. Bearcroft has met with much success. The Government would, no doubt, look upon the proposed departure with pleasure Towards the building of the two schools there was a grant of several hundred pounds in each case. And should funds be necessary to carry out the new policy as it should be pursued, it may be confidently believed that any reasonable assistance would be given by Government towards so desirable an aim." But it is in plain English—Is there any adequate reason why Cornwall should not have its Mining College?

REPORT FROM DERBYSHIRE AND YORKSHIRE.

May 8.—Mining and the Iron Trade of Derbyshire have undergone but little change of late. In the lead districts the output of ore is reported to be about an average, but there is some prospect of increased activity in the development of some of the mines in which of late not much has been done. This is to be done by increased capital, the want of which has much interfered with operations at several of the lead mines, whilst there is the still further disadvantage at many places of want of railway accommodation. This, no doubt, will be supplied in time, and a step in that direction has already been taken—although it may not do much for the lead mining interest—by the passing of the Dore and Chinley Railway Bill, which will give a shorter route from Derbyshire to Manchester than the existing circuitous one by the Midland line. It will certainly be of some advantage to several coal mines, and to the inhabitants of several districts that are at considerable distances from a railway, and who, besides, have to pay a much higher price for their fuel than they will have to do in the future. It will also be of some benefit to manufacturers, who will be able to purchase their engine coal on better terms than they can now do. Of late, it may be said, the coal trade of Derbyshire has been in anything but a flourishing state, the demand being limited and the price low. Business with the Metropolis, however, has kept up fairly for the time of year, especially as regards Langley Mill, Grassmoor, Eckington, Clay Cross, and Blackwell. In steam coal a moderate trade is being done, but the ironworks and railway companies are still the largest consumers. Not so much doing in gas coal, whilst the demand for small for the use of boilers is somewhat moderate. Some of the disputes on the wages question appear to be in a fair way of settlement. The miners at the Dronfield Silkstone Colliery have resumed work by accepting the employers' terms of 10 per cent. reduction, and, no doubt, the Unstone and some other men will do the same. With coal so plentiful in all the markets, prices have come down to a point that cannot leave a profit, and it cannot be expected that colliery owners will carry on their works at a loss. The North Staveley Colliery, it is said, is likely to be closed, for a time at least, owing to the expiration of the lease, although the coal is not exhausted. As this will affect about 400 men and boys, it is to be hoped that an arrangement will be come to for carrying on the work of the mine.

The Iron Trade of Derbyshire has kept up well, the production being, however, not much above what is required for the home works and for other districts. There are a good many furnaces out of blast, and in the present state of things they are likely to continue so. Still, a considerable tonnage of pig finds its way into Staffordshire for rolling. There is also a steady consumption at the home foundries and mills, although not so much at the latter as was formerly the case. The principal rolling mills belong to the Butterley Company, as it is termed, although there are only two or three partners. The firm, however, have erected a town close to one of their works, and known as Ironville, and have supplied it with both gas and water. The Staveley Company's Works have been kept steadily going, the foundries being the largest in the county, and well known far and wide for gas and water pipes, pillars, and other heavy castings. The foundries of the Clay Cross Company, turning out similar work, have also been kept fairly going. Light and ornamental castings, however, are in but moderate request, but there is a steady output of mining appliances at one establishment having an extensive connection at home and abroad.

With the exception of a few of the heavier and special branches of trade, business in Sheffield and the district is anything but good, and complaints are becoming pretty general. In the composite armour-plate department there is plenty doing at the Atlas and Cyclops Works; but the make of other descriptions of rolled iron is less than it was a few months ago. The production of steel keeps up well, all things considered, a good deal of Bessemer being taken for tools and springs. Rails are still turned out on but a moderate scale, and principally for home lines, for the Sheffield makers are not in a position to compete for foreign orders, owing to the heavy railway rates they have to pay to any of our seaports. In other descriptions of railway material, however, there is a fair output. In crucible steel, in addition to what is required by the cutlery and tool houses, something like an average is being taken for heavy and other castings, including railway wheels, axles, &c. Only a few of the cutlery houses are able to keep their hands fully going, and these are the leading ones engaged on the best work, and able to stock. In large knives for machines, as well as for cane-cutting, there are some orders to hand; but the American demand continues quiet. Heavy tools are in moderate request, but the demand for lighter ones is tolerably good, and the same may be said with respect to hand-made saws. Shear-makers are showing to rather better advantage, whilst there is a steady output of malleable iron goods. At the foundries there has not been any change, some of them managing to keep their hands fully employed; but the strength at a good many of them is not numerically so large as it was formerly. The engine-works are doing a moderate business, but the railway wagon builders in the district continue to do well in both new work and repairs.

REPORT FROM LANCASHIRE.

May 8.—Generally a fairly steady tone is being maintained throughout the coal trade of this district. Although it has been found necessary to give way upon some of the top quotations of last month, which were only being obtained in a few exceptional cases, there has been no general reduction in prices, and pits are kept running about four and in some cases five days a week, with the bulk of the output going away, the only very material accumulation of stocks being in the common classes of round coal. The cold weather is keeping up a fairly good demand for the better classes of round coal for house fire consumption, and for best Wigan Arley 9s. per ton at the pit mouth is maintained as the minimum price, with second qualities averaging 7s. to 7s. 6d.,; ordinary Pemberton Four-feet, 7s., and common house fire coals, 5s. 6d. to 6s. per ton. In steam coal, with the exception that large railway contracts, representing upwards of 200,000 tons, have during the past fortnight been placed in this district at prices averaging about 5s. 6d. per ton at the pit, trade continues dull. The local requirements for ironworks and general manufacturing purposes are only limited, and the depression in the shipping trade which has caused so many vessels to be laid aside is naturally restricting the demand for common coal for steamers' use. The lowness of freights is, on the other hand, to some extent giving a little activity to the shipments of coal; but there is so much offering in the market that very low prices have to be taken. At the pit mouth common round coal ranges from 5s. to 5s. 6d. per ton; and delivered at the High Level, Liverpool, or the Garston Docks, it can be got at 7s. to 7s. 3d. per ton.

In the Iron Trade business continues to drag on slowly, with little change from week to week, except that prices tend steadily in a downward direction. Not only are the actual requirements of consumers small, but in many cases they are more than covered by the deliveries which have to come in on account of iron already bought, and the persistent weakening tendency shown by prices naturally operates as a check upon transactions of a speculative character. Delivered equal to Manchester, prices average about as under:—Lancashire pig-iron, 43s. 6d. to 44s.; Lincolnshire, 43s. 4d. to 44s. 4d.; and Derbyshire, 44s. 6d. to 45s. 6d., less 2½; but on the bases of these figures there is very little being done, and where buyers have orders of any weight to give out sellers are to be found who are prepared to come in at under the above figures. In finished iron there have been moderately good orders giving out in connection with bridge work, and there is also a fair weight going away for shipment; but generally trade is very quiet. Delivered into the Manchester district, 5*l.* 15s. remains the average price for good local and North Staffordshire bars, but inferior brands and North country makes are to be got for 2s. 6d. less.

Founders still complain of a general slackness in trade, and very low prices are taken to secure orders. In pipe castings prices are being cut excessively fine, and ordinary sections can be got as low as 4*l.* 7s. 6d. per ton, delivered into this district.

Engineers, except those dependent upon marine work, are kept fairly employed, and the complaints made are not so much of any actual scarcity of work as of the low prices at which it has to be taken.

TRADE OF THE TYNE AND WEAR.

May 8.—There is great depression in many trades here at present, and a considerable number of men are out of employment. There is little change in the position of the iron shipbuilding trade, although it is understood that a few new orders for ships have been given out during the past few days. The meeting of shipowners and managers at Newcastle last week was largely attended by local men, and also by others from various districts. The Clyde and other shipping centres was represented, but scarcely any real business was done, as a great diversity of opinion was shown as to the measures necessary in order to improve the shipping trade. As to the leading proposition to lay up 25 per cent. of the ships for a certain period, this did not meet with much support. There is still a large number of vessels laid up in the North-Eastern ports, and owners and managers appear to wish to manage their business in their own way, and to employ vessels when it is possible to do so at a profit. Perhaps, however, the meeting may lead to an organisation of some kind, and abuses which have crept in may, by joint action, be removed. It is stated that managing owners, even at the present time, are reaping large profits, as they are paid on the gross earnings, instead of having a commission on the net profits. The decline in the goods and mineral traffic of the North-Eastern Railway Company over the four months of the present year has been very serious, and it will affect the next dividend of the company. This is caused by the restriction policy of the ironmasters, which has reduced the quantity of coke, iron, and lime carried. The bulk of the loss of revenue is caused by the state of the Cleveland iron trade. The coal shipping ports are taking a large quantity of coal and coke, and the general trade of the district has not been much reduced.

The late price of coal and the low rate of freights are stimulating the oversea trade in coal. In the first quarter of the present year, despite the mild winter, it is stated that the shipments of coal to home and foreign ports from the Tyne were 190,000 tons above those of the same period last year. In the coal trade there is a greater demand, and prices are decidedly better. For best steam coals for immediate delivery 9s. 3d. is now the current quotation, and 9s. 6d. has been obtained for some contracts. It now appears to be certain that a good business will be done this season in Northumberland steam coal. In Durham the gas coalworks continue to be fairly employed, and many of them are fully employed. Nut and smithy coal also continue to be shipped freely oversea.

The quiet state of the Iron Trade lessens the demand for manufacturing coal, and the demand for coke is also reduced from the same cause. Several coking coalworks have now been closed in the county. The price of household coal in the London and other markets is still very unsatisfactory, although the collieries on the Wear and in the Hartlepool district have been fairly employed during the past week. A large fleet of sailing vessels has arrived, and the stoppage of the Thornley, Wheatley Hill, and Ludworth Collieries has considerably reduced the output of house coal; still, there is a sufficient supply to prevent any rise of consequence in the price realised.

The Thornley group of collieries is now in the market for sale by auction. The royalties held are large, and a large area of house and other coal remains to be worked. There is also a valuable plant in the works, some of the engines, &c., being of modern construction. There has been a large increase in the shipments of house and gas coal at Seaham Harbour during the past week, and light vessels continue to arrive in fair numbers, but the demand for manufacturing coal is not so good. Since the opening of the new shipping staiths on the south side of the river at Blyth, erected by the North-Eastern Railway Company, the shipment of coal from the port has been greatly increased. During the month of April the exports exceeded 30,000 tons, being an enormous increase over the exports in the corresponding period last year, and much in excess of any previous month's shipment. The principal portion of these coals was from Northumberland collieries, but several vessels also shipped Durham coals at the port. The Blyth Harbour Commissioners are rapidly pushing forward the improvement of the port by dredging the bar and channel, and also finishing the east portion of the river frontage. The new line of railway from the pits in the vicinity to the port is also nearly finished. The owners of the Radcliffe Colliery, Messrs. Peter, Haggie and Co., continue to improve the works there and shipping-place at Amble. They are now about to put down a new pumping-engine in place of the antiquated engine hitherto employed. The new engine will be placed at the bottom of the shaft, and it will force the water up pipes to the surface from a depth of 73 fms. A fair quantity of excellent steam coal is now raised there, and a considerable quantity of fire-bricks and other fire-clay goods are also manufactured.

A serious boiler explosion occurred last week at the Boldon Colliery, near Sunderland. This is a large new colliery belonging to the Harton Coal Colliery. The works are very extensive, and 15 boilers were placed on the surface, which supplied the winding and other engines. One of these boilers exploded, and a considerable portion of it was thrown 150 yards from its seat, one man being killed and another seriously injured. Nothing has yet transpired as to the cause of the explosion, but a searching enquiry will be made at the inquest.

The Iron Trade continues in a very depressed state, and the tendency is still to lower prices. The collapse of the iron shipbuilding trade for the present has a most disastrous effect on the manufactured iron trade, and, of course, the pig-iron trade suffers also. It was hoped that the demand on foreign account and the restriction of the make would keep up pig-iron to late quotations, but this is scarcely likely to be realised. There is little change in the value of any kind of raw or finished iron. The bar mills are still well employed, and there is a great amount of bridge work on hand in the district. Some good orders for locomotives have also been given out on the Tyne to the makers of first-class engines. Messrs. Black, Hawthorn, of Gateshead, have got large orders for tramway locomotives. Marine engine and boiler builders suffer most, of course, from lack of orders, and men still continue to be paid off engaged in these departments of work.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

May 8.—The event of the week is the publication of Alderman Avery's award, referred to below. The effect upon the market has been to give buyers of iron an additional lever in their efforts to "bear" the market. Makers, however, are resisting the attempt, stating, with a good show of reason, that the drop has practically been already discounted. Finished iron buyers still hold aloof from placing any large orders, and the works continue in only partial operation. Bars are 6*l.* 10s. to 6*l.* for the qualities mostly selling, and hoops 6*l.* to 6*l.* 7s. 6d. Boiler-plates are 8*l.* 10s. to 9*l.*, and merchant sheets (singles) 7*l.* In the pig-iron trade those native makers are doing most who turn out second and third class sorts. Yet there is great room for improvement in demand, and competition from Derbyshire, Northampton, and similar outside districts is severe. Common Staffordshire pigs are 40s. to 37s. 6d., and all-mine 62s. 6d. to 57s. 6d. The coal trade does not exhibit noteworthy alteration upon the week, and prices still favour buyers upon the basis of 8s. to 9s. for furnace coal and 6s. to 6s. 6d. for forge descriptions

The arbitration upon the ironmasters' demand for a reduction of 6d. per ton in puddlers' wages and 5 per cent. in those of mill and forge men has resulted in Mr. Avery awarding that puddlers' wages shall be dropped 3d., bringing them to 7s. 3d., and millmen's wages in proportion, the reduction to take effect from May 19 to Aug. 23, and to continue thereafter, subject to one month's notice. Whilst this compromise will make work more harmonious throughout the summer than as though the full demand had been granted it yet leaves the masters paying 6d. a ton more to puddlers than at the Middleborough firms. The reduction is sufficient to give only the slightest relief from the current competition by northern firms.

The monthly meeting of the Mines Drainage Commission was held at Wolverhampton on Wednesday. The Chairman (Mr. Walter Williams) drew the attention of the Assessment Committee to the fact that, according to the Government returns of the coal in the South Staffordshire and East Worcestershire district there had been 10,000,000 tons and a little over mined. The statistics of the Mining Records Office, moreover, showed that 7,000,000 tons were mined at collieries outside the district. According to the returns furnished to the Commissioners 3,000,000 tons were raised in their district, and from the collieries of Cannock Chase the total was 3,500,000 tons. The possibility of the next rate being 6d. on coal and ironstone instead of 9d. was canvassed with much more freedom on account of the starting of the new pumping machinery drawing nearer.

The powerful pumping machinery erected at the sole expense of Mr. John Raybould to drain the Bromley Pound has now successfully performed its functions. It has drained the pound so that the Thick or Ten-yard coal has been relieved, and as the pumps are 180 yards from the surface in a pit of 11 ft. diameter, the white ironstone will also be relieved. Mr. Raybould and other coalowners are now, therefore, preparing to get the Thick coal.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

May 8.—The paving settstone quarries along the north side of the peninsula of Lleyn, Carnarvonshire, which hitherto have done a large trade, are not so busy at the present time. The quarries of a similar nature, but worked in different stone, at Penmaen-mawr, also on the Carnarvonshire coast, are also short of trade. There is a little doing in macadam and road-stone generally, but the trade in dressed blocks is very quiet. This is partly owing to the present rapid adoption of wood pavements in our large towns.

The Slate Trade of Carnarvonshire is improving, and the ports present a cheerful aspect. During the last three months the North Wales Narrow-Gauge Railway brought down from the quarries double the quantity of slate it did in the previous three months. This little line of 2 ft. gauge starts from the London and North-Western Carnarvon-hire Railway at Dinas, four miles south of Carnarvon. Its main line runs for about eight miles on the way to Beddgelert. Its great slate-feeder is the Glanrafon Slate Quarry, which is an extensively developed quarry, producing slates of the thin blue Festiniog kind, and shipping a large quantity monthly. A branch diverges from the main line at Tryfaen Junction, and winds in numerous curves and at a succession of gradients of from 1 in 30 to 1 in 100 a considerable height up the flanks of Moel Tryfaen, or the hill of three stones.

These three stones are jutting pinnacles of the grey gritstone rock that underlies the great Cambrian slate formation, and in the Moel Tryfaen Slate Quarry there is a beautiful illustration of the junction of the two. The deep purple slates of the Faen Coch, or red vein, are lying against the gritstone curved upwards at a high angle, showing that the upheaval of the grit took place subsequently to the deposition of the slate. From the highest passenger station and incline of about 1000 yards leads to the terminus of the line, and from this point the tramways of the different quarries diverge. Looking up the hill the one to the left or north winds around the hill to the Alexandra Quarry, of which the Duke of Sutherland is the chief proprietor. The one straight before us or east leads up to the Moel Tryfaen Quarry, just alluded to. One to the right, or south to the Braich Quarries, and another in the same direction, winds around the southern slope of the hill to the Old Braich and to the Fron!

And a cartroad from the top of the Moel Tryfaen incline leads to the Bryn-y-Ferram Quarry, about 400 yards to the east. The latter quarry has hitherto been worked locally, but is now to be worked on a larger scale by a London company. All these quarries are now working well. The view from these elevated quarries of sea and land is magnificent, and on very clear days the outline of the Wicklow Mountains, in Ireland, is quite discernible.

Considerable satisfaction is felt at the appointment of Mr. R. D. Pryce, of Cyfronydd, and the proprietor of the Aberllefeni Slate Quarry, Corris, to the office of Lord-Lieutenant of Merionetshire. Mr. Pryce is of an old Welsh family, and is through the Charltons of Apley Castle, Shropshire, descended from the Princes of Pewys.

Through the improvement in the slate traffic and in local trade generally the receipts of the Cambrian Railway Company now show a considerable increase. I wish I could write as satisfactorily concerning lead and copper mining, but that the placards announcing the sale of the plant at the Carnarvon Copper Mines and the Talargoch Lead Mines staring me in the face during my travels of the past week, it is all but impossible to do so. The collieries continue in good work, and the men seem contented. The chemical works along the estuary of the Dee have every appearance of activity. The stone quarries and the clayworks are also in active work, and the minor mineral and metallic industries are in active work.

TRADE IN SOUTH WALES.

May 8.—There is no abatement in the activity of the Steam Coal Trade, and business at all the Welsh ports is excellent. Cardiff sent away last week 142,597 tons foreign and 19,588 coastwise; Newport, 25,553 tons foreign and 23,765 coastwise; Swansea, 28,911 tons foreign, and about 14,000 coastwise. The continued cold weather helps to maintain the house coal trade in a healthy condition. Small steam coal is not in quite such active demand, but patent fuel is much enquired for. Last week Swansea exported 9486 tons, and Cardiff 3594*l.* Mr. D. Davies, M.P. for Cardigan, is about to sink a pit near Maesteg, and another to the west of Aberdare Junction, 19 ft. in diameter, the largest in South Wales. These two pits will cost the firm, of which Mr. Davies is chief, about 500,000*l.* Another pit is to be sunk near Pontypridd, and yet another to the south of that place. These pits will give a total estimated output of 1,300,000 tons.

The Iron and Steel Trades show no signs of improvement. Work is going forward, and that is all. Newport shipped 4892 tons last week, and Cardiff 3756 tons. Iron ore is not arriving in such large quantities. Cardiff last week received 4287 tons from Bilbao, and 3767 from other places; Newport 5410 tons from Bilbao, and 3260 from other places. Prices remain low.

The improvement in the Tin-Plate industry continues. Good IC cokes are quoted at from 16s. to 17s., and charcoals from 17s. 6d. to 20s. Prices are hardening.

HYDRAULIC PUMP.—On Friday and Saturday last a trial was made of one of Mr. JOSEPH MOORE'S patent hydraulic pumps at Messrs. Grant, Ritchie, and Company's Works, Kilmarnock. In these pumps there are no pump-rods, and in their place there are two pipes of small diameter, in which is contained water under a pressure of 1000 lbs. per square inch. This water serves as a hydraulic rod for transmitting the power of the engine on the surface to the pumps underground, and enables the pumps to be placed round any number of turns, and at any distance from the engine. It is expected that the arrangement will prove invaluable for dook pumping and for sinking shafts. The pump which Messrs. Grant, Ritchie, and Co. tested is for the Broxburn Oil Company. The engine will be placed on the surface, and the pump down a dook 300 yards long. The vertical lift will be 720 ft. In the trials the pump was placed 120 ft. from the engine, and water was discharged at a pressure of 200 lbs. per square inch. During the two days the pump was at work it was seen by upwards of 100 gentlemen interested in mining. It worked throughout very smoothly and efficiently. The system is also suitable for sinking, in which case the columns of pipes and the plungers slide in wooden guides, in the same manner as a cage. They are suspended by two sets of rods from an hydraulic ram, which raises or lowers the pump and pipes as the sinking proceeds.

Meetings of Public Companies.

COLLACOMBE CONSOLS MINING COMPANY.

The general meeting of shareholders was held at the account-house on May 3,—Dr. KEMPTHORNE, of Callington, in the chair.

Mr. E. NICOLLS, solicitor (the purser) read the statement of accounts showing—Expenditure: Balance last account, 229*l.* 17s. 2d.; labour cost, 693*l.* 2s.; merchants' bills and sundries, 710*l.* 11s. 11d. —Receipts: January call of 2s. per share on 12,000 shares, less 138*l.* arrears of call, 1062*l.*; arrears of call at last meeting, 88*l.* 2s. 6d.; sale of copper ore, 179*l.* 10s. 5d.; sale of blende, 29*l.* 10s.: leaving debit balance, 265*l.* 16s. 11d.

The agents (Capts. W. Skewis and S. Hitchens) presented the following the following report:—

The engine-shaft is set to sink by nine men to the required depth for a 103 fm. level. It is in a fine channel of light clay-slate, and in keeping with that which is generally found very productive for copper ore. The shaft is under the lode, but close to it. As soon as the shaft is down we shall cross-cut through the main and No. 2 lodes, which we have every reason to believe will be found to be good for copper ore. In that case levels will be driven east and west on their course, and the shaft continued sinking for a 120 fm. level. The Nos 1 and 2 winzes in bottom of 96 west have been cleaned up 8 fms., which is the bottom of No. 2. The main lode here is 2½ ft. wide, worth 2 tons of copper ore per fathom. The No. 2 winze is set to sink by nine men the required depth to be equal with the 103 at the engine-shaft. When this is done we purpose to cut through the north lode, which was seen in the 96 immediately west of this winze to be 10 ft. wide, containing rich work for copper, and a large quantity of sulphur-mundic, altogether a splendid looking lode, and such as we think will prove to be much better when cut through from the winze at the 103. The cross-cut north from No 1 winze is driven about 5½ fms. At this point we think we have struck the south wall at the north lode referred to at No. 2 winze. This cross-cut will be continued to prove its size and value. The lode in the stope in the back of this level is worth 10*l.* per fathom. This is in unexplored ground between the 84 and 96 to the engine-shaft—50 fms. We are glad to say the mine is now drained and cleared to bottom, and from the eastern ends to the western ends of several of the bottom levels. It is also well supplied with pumping and hauling engines and pitwork from top to bottom of the best quality. Also a splendid crusher and self-acting jigging machinery, all new, and arranged to treat large quantities of stuff upon the cheapest and best principles. All this work having been done and machinery supplied and paid for, the future capital will be applied to the deeper sinking and driving levels into new and unexplored ground, as well as cross-cutting to prove the value of the side lodes, which we regard as being very important from the nature of the stratum and the size and character of the lodes as now seen at the various points in the bottom of the mine. It is not too much to believe that valuable discoveries will soon be made and a good mine opened up.

Capt SKEWIS added that he thought a great change would be wrought in the mine in the course of four or five months; at the expiration of which time, judging from the nature and value of the lode, he thought they would be in a position to effect regular sales. The splendid specimens of ore on the table were taken from the bottom of No. 2 winze and from the back of the 96.

The report and statement of accounts were unanimously adopted, and a call of 1s. 6d. per share was made, payable within 14 days. A vote of thanks to the Chairman concluded this part of the proceedings.

The shareholders afterwards dined together in the large room at the account-house, Dr. KEMPTHORNE again presiding. After the loyal and patriotic toasts had been drunk,

The CHAIRMAN proposed the health of the Purser, who, he said, had interested himself in that mine in a very public-spirited way. Had Mr. Nicolls not done so, he believed the mine would now have been inactive, and, therefore, they should give him their thanks for putting them in possession of that great enterprise. Mr. Nicolls investigated *every* point, and thoroughly convinced himself that it was a good concern before he recommended it to them. The toast was drunk with musical honours.

Mr. NICOLLS, in responding, remarked that they had arrived that day at a point in the history of the mine which they had been aiming at for a long time. They had now got the mine dry at the deepest point, and they had found what they expected they should find—good ore there. They had also found that other parts of the mine were showing signs of ore in paying quantities, such as the back of the 96, and he had no doubt that if they exercised a little patience in the course of a few months, when they got a little more room at the bottom of the mine, and arrangements for drawing at surface were completed, that they would raise enough to pay costs. He hoped for more than that. They were at present making calls, but they were making diminishing calls. They began with a call of 2s. 6d., then they got to 2s., and now 1s. 6d., and he hoped that next time the call might not be more than 1s. and if possible not more than 6d., and after perhaps another call or so he hoped they would be able to turn the corner and make profits. The ore of that mine was of good quality, the ground was very easy to work, the facilities were everything that they could wish for, and there was no reason now that they had almost every appliance that they required, that the mine should not be one of the best mines in the neighbourhood. He would advise the agents to be as economical as possible in working the mine—not to employ more men than were necessary, and to give them fair wages and nothing more, and thus try to save the pockets of the shareholders as far as possible. He thought every item of expenditure should be looked into very carefully. The mine should be kept in an efficient condition, but too much care could not be exercised in its management. The mine showed sufficient indications at present to justify them in concluding that with the care and foresight and skill which men like their agents would bring to bear upon its development, they would soon be able to come before the public and recommend it as a dividend-paying concern.

The CHAIRMAN, in giving "Collacombe Consols," said he should associate with that toast a very important name. He was about to propose to them the health of one of the most prominent miners of that county, and he had no hesitation in saying so. He alluded, as they well knew, to their managing agent, Capt. Skewis, who was a miner of large experience, good judgment, and great tact and ability. He thought it would be a great loss to that district if Captain Skewis were to leave it. They had very prominent mining men in the West, and they equally required very prominent mining men in the East. If they looked at Capt. Skewis' mines they would see that they were now beginning to take a prominent position, and he thought the time would not be far distant when they would find that his mines would be quoted on the Stock Exchange as being good promising concerns. This toast was also received with musical honours.

Capt. SKEWIS, in replying, said Collacombe Consols was not a new mine; it was not an unknown mine. It was not situated in a district which was unknown for the production of copper and tin. It was in a locality that had been richly productive of those minerals, and was surrounded by some of the best that had hitherto been known. It had itself produced as much mineral for the money applied to it as any mine almost in the neighbourhood. Therefore, they were not dealing with a fictitious property, but they were dealing with a real property. Since they had been working that mine they had had difficulties to contend with which were never anticipated, and with which but few persons were capable of dealing. He had had long experience in mining matters, but he had no recollection of having to deal with such difficulties as they had met with and overcome in the development of that property. They had no sooner fixed the engine and commenced work than they came in contact with a shaft that was gone together in soft, slippery ground, and they had a mine full of water, and no human being could conjecture what was underneath for the men to meet with. Therefore, they had to use very strong timber, and they had to proceed with the cleaning of the mine with great caution and judgment, and notwithstanding his experience in mining matters it would have been utterly impossible for him to have succeeded in clearing the mine without the assistance of some of the ablest miners and best men that could be procured. They had had good men and true—men who had risked their lives and worked hard under some of the most trying circumstances that it had ever been his lot to witness. Therefore, whatever may have been felt or thought with regard to the amount of money these men had received for their labour it had not been a farthing more than they had richly deserved. He had always felt that the shareholders of that mine had confidence enough in him, and had liberal disposition of heart, and mind sufficient to believe and wish that he would pay every man according to his merits. He had endeavoured to keep in mind what he believed to be the spirit of the shareholders in this matter, and to do what he considered to be honest and just for these poor men. So long as men of judgment and honesty, and men who knew their work, were employed, it did not matter how much money they received so long as the employer had his shilling's worth of work for his shilling. He never meant to act on such lines in this matter as to drive the best men out of England to work in foreign mines. He had always kept in view that spirit which would operate on the minds of good men and make them feel that they would like to work where he was, and had sought to establish the feeling in their minds that they would always receive from him fair and honest treatment. With the help of such men as he had described they had succeeded in getting to the bottom of that great mine. They had cleared it and furnished it with as fine a set of mining materials as could be found in the county. It was working well, and reflected great credit on the men that had charge of the fixing. They had not found above the bottom of the mine large riches and quantities of ore left by former workers. They took away the ore that they discovered as they went along, and left from the bottom of the mine to New Zealand all unexplored with copper and tin similar to what existed above. It was their intention to deepen the shaft and extend the levels in the same manner as was done by the original workers, and from the appearance of the lodes in the bottom of the mine he had every confidence that they would open as good a mine as was opened in former days, if not a better one. He believed the day was near when they would be able to go to the market with such quantities of ore as would pay the costs of working and give a good dividend to the shareholders. If he did not feel confident that that would be the ultimate issue of the mine he should not think of investing his money in it as he had done. He had always been a large shareholder, but he had never offered his shares for sale, and did not intend to do so.

Mr. J. PEARCE expressed pleasure at seeing Mr. W. G. Todd, an agent from Mr. Bell's Asbestos Works, present, and proposed his health, which was cordially received.

Mr. TODD stated that he had come down to work the Devon and Cornwall district. The gentleman who first used the asbestos in this locality was Mr. W. J. Chalk, manager of the Tamar and Kit Hill Granite Works, who said it had saved fuel for him to the extent of one-half.

Capt. SKEWIS said as the result of using asbestos at the Old Gunnislake Mine an engine which had required 25 lbs. to 1 in. pressure could now be set to work for 12 lbs. to 1 in.

The health of the hostess, Mrs. Hitchins and her daughters, having been enthusiastically drunk,

Capt. SKEWIS, in proposing "The Health of the Engineers," Messrs. J. and H. Pearce, observed that it was very essential in such a mining district as that that they should have gentlemen residing in the neighbourhood who were capable of manufacturing engines and other machinery which they required. The Messrs. Pearce had for many years carried on a very important establishment at Tavistock, and they had turned out many valuable engines and pitwork which did them great credit. They were always ready to join in mining enterprise, and to take their share of responsibility. This toast was enthusiastically drunk.

Mr. J. PEARCE responded. He dwelt upon the depression which had been experienced in connection with mining for a long period, and expressed a hope that they would soon see a return of prosperity. He expressed himself highly satisfied with what he had heard that day respecting the prospects of the mine, and said how glad he was to see Mr. Haswell with them. There was a time when they might attend 10 mine meetings without seeing a single agriculturist present, but he was glad that those gentlemen were realising that their interests were to some extent identical, and he hoped that this feeling would be still stronger manifested by the attendance of agriculturists at their meetings.

The health of Mr. Bawden Skewis, formerly secretary of the mine, was next cordially received.

Mr. BAWDEN SKEWIS, in replying, said he believed that when Collacombe Consols Mine become known market operations in connection with it would be as great as those in connection with any other mine in Devon or Cornwall. He believed there was a great future for Collacombe Consols, because the indications were good, and everything promised great success.

The CHAIRMAN, in responding to the toast of his health, proposed by Mr. J. PEARCE, said he thought if a little protection could be put on minerals it would do great good to the mining interest of this country. It was a question whether the Government would not consider the subject in course of time. It seemed to him that things were verging round to a point of that sort, and that the Government should interfere to do something for the industries of our country. It was hard lines for us to go on year after year, and hear it said again and again that we are dependent on the foreigner. If the taxpayer were relieved, and a little more put on the foreigner, he trusted that they would then find wool a little dearer, and the price of tin would improve.

WICKLOW COPPER MINE COMPANY.

The half-yearly meeting of shareholders was held at the offices of the company, Grafton-street, Dublin, on April 30,

Mr. E. BRESLIN, J.P., presiding.

Mr. T. BAKER (the secretary) read the report, of which the following is an abstract:—

It was late in last December when the necessary sanction was obtained from the shareholders to the financial arrangements which the directors had succeeded in making upon their personal security, to provide capital for the manufacture of artifical manures for the season's trade. Immediately thereupon the directors secured the services of the best men they could get to push the manure trade, and they were agreeably surprised at the large number of orders for Arklow manures obtained from first-class customers, notwithstanding the late period at which their travellers went round. The directors intend to call the shareholders together immediately the present manure season has terminated to inform them of the actual result of the season's working, and of the grounds upon which they anticipate a very favourable one to follow, and to submit a plan which they hope will be found to be a practical one for providing the funds to carry on the extended and profitable manure trade which it is clearly open to the company to do. Immediately the manure-making terminates the erection of the ochre machinery will be gone on with. The fact that the selling of manure only began just as the half-year closed, and that, consequently, there was little to set against the current establishment charges, coupled with the circumstance that the directors thought it advisable to write off a comparatively large sum for depreciation in the value of the stock of bones at the works, will explain the unfavourable aspect of the manure account now presented. The operations at the mine have been limited to supplying the manure works with pyrites in stock to raising moderate quantities of iron ore and of ochre, and to sending the latter to Arklow to be in readiness for treatment by the new machinery. Both at the mine, and at the Arklow Manure Works the plant and appliances have been maintained in good order. The directors regret to announce the retirement from the board of Mr. C. J. Fay, M.P., who rendered valuable assistance to the company in connection with the Arklow Harbour negociations. The vacancy thus created has been filled by the election of Mr. J. C. Bennett, Rathmines."

Messrs. E. P WRIGHT and W. R. FOYLE, the auditors, certified that there was a sum of 7864*l.* 12s. 9d. to the debit of profit and loss.

The CHAIRMAN, in moving the adoption of the report and accounts, said the meeting held in December last was for the purpose of enabling the directors to raise money for the manufacture of manures. Since then the directors had worked energetically, and with very good results. The severe weather in December and January prevented the materials from reaching Arklow as soon as they could wish, and this retarded operations. They had, however, not only sold all the manures they could manufacture, but had many orders for stuff which they were unable to supply. That fact showed that there was an ample market for the sale of the manures if they could only produce them in good time next year. Their travellers declared that there would be no difficulty in disposing of 4000 tons or 5000 tons, if put into the market in time. He felt, therefore, that there was a good prospect before them. At the end of the season the machinery for the ochre manufacture would be erected and set to work. Mr. Fay, M.P., one of the directors, who had rendered much assistance in obtaining 5000*l.* from the Government in connection with the Arklow Harbour Navigation having retired, the board had selected for the place Mr. J. C. Bennett, who would co-operate energetically for the benefit of the concern.—Mr. CONNALL seconded the proposition, which was unanimously agreed to.

Mr. C. CUMMINS (Deputy-Chairman) gave notice that at the next meeting he would move that only one meeting of the shareholders should be held in each year. The half-yearly meeting in April only imposed trouble and expense, without affording any real information, because at that time, they were really only preparing for business, the actual results of which would not be ascertained till after the summer half-year.

The CHAIRMAN agreed with Mr. Cummins that the company being now substantially a manufacturing concern an annual meeting only was necessary.

The CHAIRMAN, in reply to Mr. CONNELL, who asked whether there was any copper being taken out of the mine, said he feared the period of copper bottoms was over with them.

A vote of thanks having been accorded to the Chairman, the proceedings terminated.

UNITED MEXICAN MINING COMPANY.

The ordinary half-yearly general meeting of shareholders was held at the Guildhall Coffee House, on Wednesday,

Mr. GEORGE HARRIS (the Chairman of the company) in the chair.

Mr. W. M. BROWNE (the secretary) read the notice calling the meeting; the report and accounts were taken as read.

The CHAIRMAN: Gentlemen, I have the pleasure to rise to propose that the report and accounts be received and adopted, and in doing so I have little to say; simply because at the last three meetings you have had everything as fully as the directors could possibly give it to you. However, I may mention, perhaps, that since those meetings, although it is but a short time, the mine has considerably improved, and the output has been very large; and we have a telegram this morning stating that the last weekly excess over outlay is, as we read it, $10,300.

Mr. MORRISON: For the week ended Saturday last?—The CHAIRMAN: Yes, for the week ending Saturday last.

Mr. MORRISON: And what was the previous week?—The CHAIRMAN: It has never come to hand; we shall have it in due course. There is one interesting fact which I may mention, which is that in the pozo No. 6 of San Juan, going down under the adit, we have come upon a lode 5·67 metres wide, which is a very extraordinary width; and although the middle of the lode is not all bearing, yet both sides are. I hardly know that I have anything else to add; I now move the adoption of the report and accounts, and shall be happy to answer any questions which any shareholder may put.—Mr. HOWARD seconded the motion.

Mr. WILLIAM ABBOTT: As you have not thought fit to give us any lengthened remarks in introducing the report for our consideration and adoption, I presume you are well satisfied with the announcement you have made with respect to the telegraph just received, and I think, Sir, you may well be. (Hear, hear.) There are one or two points I should like to touch upon. I have received communications from several shareholders with respect to the accounts. I think, Sir, in future you might make, as we have made, a new departure in this company.—The CHAIRMAN: From to-morrow?

Mr. WILLIAM ABBOTT: I think you might make a change after 50 years. We might now, if you will allow me to throw out the suggestion, adopt a different form of accounts, and accounts which are more clearly intelligible. (Hear, hear.) I hope, Sir, you will be good enough to take note of these few remarks, and that you will be able to give the shareholders such a satisfactory explanation that it will not be again necessary to refer to it. There is a paragraph in this report which, for the life of me, I cannot understand, which is—"Amount standing to account of the several mines in the new concern which has been expended by the company, $282,306." Now, Sir, I have a vague idea as to what it may be, but I should very much like to have it stated on your authority. Another suggestion I would make is, that in future you should show a profit and loss account, and show how much has been expended on capital account out of profits from week to week—that is to say, give us, as I suggested at the last meeting you should give us in the telegram, the gross receipts, the gross profits, and the net profits. Now, with regard to the reserve fund in Mexico—15,200*l.* What is that invested in? Because lots of the proprietors of the Mexican Railway, and even of the United Mexican Mine, have a rather shadowy idea of the security of everything in Mexico, and the point for you to enlighten us upon is whether it would not be desirable, as far as possible, that all our securities should be sent to this country, so as to free them from any attempt which the Mexican Government might make in a fit of desperation. (A laugh.) There is another point we should be glad if you would enlighten us upon, and that is how much money you have received in actual cash since the accounts were made up to Dec. 31, because many of the shareholders who have forgotten the weekly returns from time to time as to the money actually remitted home, may not be aware of the strength of your position, therefore, I shall be glad if you will inform us what is the actual amount of cash in London beyond the amount set forth in the balance-sheet to Dec. 31. As we have now turned the corner in this company, and got a little way on the long lane which always has a turning, I think, Sir, that the time has arrived when the question of dividend should be considered, and I have no doubt you will be pleased to have an expression of the opinion of the shareholders generally as to what you should do with the money in hand. (Cheers.) Now, "Hope deferred maketh the heart sick," and I think the shareholders of this company, after waiting 50 years, are entitled to a distribution. Probably, Sir, you might feel some hesitation unless the subject were mentioned here of making some distribution; but now that you have sufficient money in hand and the shares are divided, I think you should, at the earliest date, make a payment on account of dividend. (Cheers.) It has been suggested to me by some rather influential foreign shareholders that the first time you have money in hand it would be more acceptable if the 2s. 6d. per share of liability were paid up out of revenue. I do not think that would be quite acceptable to the shareholders who have waited so long; but I would make the suggestion you should appropriate to a reserve fund all forfeited shares. You do not want to realise them just now, as they are steadily rising, and before long you will get 15 for them. That amount should be placed to capital account of the shares paying up the 2s. 6d. per share liability, which would meet the strongly expressed views of continental shareholders that those shares should be made fully paid up out of capital. You have the capital there—those worthy "old gentlemen" whose period of probation has now elapsed. I throw out that suggestion with every consideration and respect, and I hope at an early date the board will entertain the idea. (Cheers.) Two meetings ago I had to combat an attack made upon this company by that pest of society, an anonymous writer, who signed himself an "Ex-Shareholder." I congratulate him upon being an "ex-shareholder." (A laugh.) He congratulates himself upon having retired from the company, and he advises the shareholders to do the same. But since that disinterested advice was addressed to you the shares have risen 50 per cent, therefore I think it was good advice that I gave you to hold firmly by your stock, and not accept that advice. (Cheers.) There is another matter which is very delicate to touch upon, but it is well that the question should be put. At a period of this company's history, when everything looked black, and you dragged money from the shareholders, the directors agreed to suspend their fees, and a very spirited offer came from Mr. Hay, who suggested that as the directors were going to take that independent and disinterested course he too would place himself upon a reduced scale of remuneration. Now, Sir, I think it is only right that we should be just before we are generous to ourselves, and I think there should come an expression of opinion from the shareholders that Mr. Hay should again be placed in the position from which he descended, and that his full remuneration should be awarded to him. (Cheers.) To Mr. Hay we owe the position which we are in to-day. (Hear, hear.) There is no doubt that Mr. Hay has managed the company with a spirit, enterprise, and honesty which, I am sorry to say, is not often found in mining enterprise. (Cheers.) I shall not trouble you with any further remarks, but would simply suggest that as you were good enough to send a full report of the proceedings to the shareholders on the last occasion you should adopt the same course on the present occasion. (Cheers.)

Mr. MORRISON said that Mr. Abbott had anticipated some of the remarks which he intended to offer. As regarded the application of the money derived from the sale of the old shares, he did not think the directors could apply it in the manner which Mr. Abbott proposed; if they made a call, and a simultaneous return of money, he thought it must be in the way of dividends or profits. He did not take it that the sale of these shares was a profit to the company; it was an increase of capital indebtedness, and he took it they could not apply it, being for capital purposes, to the payment of a dividend, which assuredly would not be for capital purposes. He had recently received a letter from a correspondent—a man who was thoroughly reliable. It was not written for speculative purposes, but simply for the purpose of giving information. The writer mentioned that the company was driving 11 different workings, all in good ore, which varied from ⅛ to ¼ vara—not so wide as the 5 metres, which was exceedingly satisfactory. The letter said that the best ore seemed to come from one of the pits. The advanced works had entered the ground of one of the adjacent mines—the El Diamante, and any discovery there would be of great importance. The writer added that the company did not seem in any great haste to develope the works there, seeing that instead of 11, 40 works could be driven on the same lode, and no doubt Mr. Hay was working the mine in a conservative and proper spirit, and accumulating a large mass of reserves. (Cheers.) He (Mr. Morrison) mentioned at the meeting, a month ago, that the company might be expected to derive $500,000 from it, and he had no doubt, judging from the advices which he had received since, that the reserves had largely increased, and, indeed, this letter confirmed it. (Hear, hear.)

Mr. HORNCASTLE said he believed that before they declared any dividend the reserve fund must be increased to $100,000, so that if there was any check in the meantime in the profits of the mine, and the work had to be continued out of other sources, the company would not find themselves in a position to make a call. As regarded the state of the mine, he had received advices which corroborated very much what Mr. Morrison had stated. He believed they had the equivalent of two years' abstraction.

The CHAIRMAN: I have been asked several questions by Mr. Abbott, and I will do my best to answer them in the fullest way I can. You ask the amount expended upon the mines in Mexico. These are debts due to the company in Mexico. In Mexico all that the occupier lays out on the mine remains as a debt on the mine, and if he leaves it, and we have had a good many mines in Mexico, that amount remains, and will be paid to us before any profits are divided by the people who take them. Therefore, these are assets in abeyance. (Cheers.) You spoke about having the gross returns, the gross expenses, and the net profits given in the telegram in future; that was ordered after the last meeting. You asked about the amount of money in London. The amount of money in London, when we receive the remittance which we are expecting will be 18,200*l.* Now, gentlemen, out of that 18,200*l.*, and looking at the fact that we consider we have profit in Mexico at the present moment, almost available profit—ore at surface, quicksilver, and other assets—we consider we have got very nearly the $100,000, which at this time the reserve fund ought to amount to. Now, under these circumstances, the directors only this morning have taken into consideration the propriety of paying a dividend—(cheers)—and we think we may rather

stretch a point, as we have been so very long waiting, and pay a dividend, and we will take the risk. (A laugh.)

Mr. WILLIAM ABBOTT: Not very much of a risk. (A laugh.)

The CHAIRMAN: We think if we were to give, if you like, say a small dividend of 2s. per share on the 10*l.* shares, or even 2s. 6d. per share, we think we can screw it out. (Cheers.) We have only thought over that this morning. There will be a little risk attached to it, gentlemen, but it will be upon our shoulders. (A laugh.) We think we can see our way clear, if you press us, to let you have 2s. 6d. forthwith. We cannot deal with the "old gentlemen's" money; we cannot touch that. It must remain as a reserve, and it cannot be touched in any shape or way. We cannot legally deal with it.

Mr. WILLIAM ABBOTT: Whilst on this point I may remind you that supposing you write the shares on capital account you retain the money.

The CHAIRMAN: When you once part with 2s. 6d. per share where is it to come back from? However, it will take some time to change the "old gentlemen" into 30*l.* shares and then into 10*l.* shares, so we can well wait. With respect to Mr. Hay, there is no gentleman present in this room who can know how valuable a man he is to this company more than myself, and I was going to propose to him, if Mr. Abbott had not anticipated me, a vote of thanks at this meeting for the admirable and valuable manner in which he has conducted our affairs for so many years. In administering the property which he has now so largely developed, I have always thought that he has had a small amount of remuneration, for he is our main stay. He very willingly, some years ago, gave up a part of his salary, without being asked, in order to meet the exigencies of the company. We accepted it with reluctance, but we were compelled to do it. We have, since we have been in a prosperous condition, restored him a part, and I should like to restore him the whole. (Cheers.) It is only a question of $2000 a year. We have written him to the effect that he is to charge the company with an extra $1000 on his salary from January last; and if the company continue to prosper we shall make it up to the full amount. I do not think, gentlemen, that I have anything else to answer.

Mr. WILLIAM ABBOTT: Except with respect to the new form of accounts, so that the shareholders may understand them. Could they not be re-cast, so as to be made more intelligible to English shareholders.——The CHAIRMAN: I am informed by the secretary if it can be done we shall be happy to accede to it.

The resolution for the adoption of the report and accounts was then put to the meeting and carried unanimously.

The CHAIRMAN said the next question they had to consider was whether they would declare a dividend, and if so whether it should be 2s. or 2s. 6d. per share.

A question was raised as to whether a dividend could be declared at the general meeting; but on Mr. WILLIAM ABBOTT referring to the Articles of Association it was found that a general meeting had the power to declare dividends.

Mr. HEIRON proposed that they should pay a dividend of 2s. 6d. per 10*l.* share.

Mr. MORRISON seconded the proposition, which was carried.

The CHAIRMAN proposed the re-election of Mr. Lewis H. Perry as a director.

Mr. HOWARD seconded, and the proposition was carried.

The CHAIRMAN proposed that Mr. Edward Crabb be elected a director in the room of Mr. William Adam, who retired; and he expressed his regret that Mr. Adam had been obliged to give up his seat on account of ill health and increasing years. Mr. Adam was an upright and honourable man, and the directors parted with him with great regret.——Mr. GOLDSMID seconded the motion, which was carried.

The CHAIRMAN proposed the election of Mr. John Grove Johnson to a seat at the board, stating that Mr. Johnson was a member of the firm of Johnson and Sons, and was well known in London.——Mr. MORRISON, in seconding the motion, said that Mr. Johnson had great knowledge and experience of the treatment of ores, and that he would be a very useful man to have on the board.

The motion was adopted.

The auditors, Messrs. George Allen and F. A. M. Nicol, were re-elected.

Mr. WM. ABBOTT, in proposing a cordial vote of thanks to the Chairman and directors, said that, had it not been for some irregularity in the form of notice which he sent in, he had intended to propose a director on this occasion. He felt, however, that the board could not be better strengthened than by the election of the two gentlemen who had just been added to it.——Mr. HOWARD seconded the motion, which was carried.

The meeting then broke up.

SANTA BARBARA GOLD MINING COMPANY.

The general meeting of shareholders was held at the offices of the company in Liverpool on April 30,

Mr. E. S. HOLLAND in the chair.

Mr. MOORE (the secretary) read the notice convening the meeting, and the directors' report and statement of accounts were submitted.

The directors' regret that in consequence chiefly of the large outlay incurred in the continued sinking of the new shaft, whereby the water could be pumped from the old mine, and access obtained to the lode in depth, and on account of no ore having as yet been obtained from the latter, the mine working account exhibits a heavy loss for the year. The produce obtained during the year has been derived from the northern part of the old mine, chiefly from above the adit, where a considerable body of fair lode was met with in the month of May last. The total quantity of mineral raised from the Pari Mine in the year 1883 has amounted to 12,534 tons; of this quantity 5559 tons were rejected at the spalling-floors as worthless stone, and 6975 tons, together with 2752 tons of stone from the refuse heap at surface, in all 9727 tons, treated at the stamping mills, yielding, including the produce from tailings sand stamped with the refuse stone, 13,293 ozs. of amalgamated gold, or an average in all of 1·337 ozs per ton.

The mine working account, irrespective of the interest, &c., shown in the profit and loss account, shows a loss for the year of 5197*l.* 11s. 4d. The sum charged to capital account in respect of expenditure during the past year on the new watercourse, has amounted to 3001*l.* 14s. 9d., and in addition there has been a payment of 2084*l.* 0s. 4d. on account of the purchase of shares in the Gaspar Mineral Rights adjoining the company's property. The new watercourse, the construction of which has occupied about three years, has at length been completed, and the water brought to the mouth of the mine. The advantage that will be derived from the utilisation of water-power for the hauling and pumping purposes of the mine in substitution for the system hitherto in vogue—working by mules—cannot, in the opinion of the directors, be over-estimated in its relation both to economy and efficiency. The superintendent reported that the new machinery was in such an advanced state of completion that it was connected with the new wheel, and a trial made on Oct. 9, with highly satisfactory results, and since the fixing of the pitwork, which enabled a commencement to be made on Jan. 4 in the work of draining the mine. This machinery has done excellent duty, the water having been pumped out of the old mine (as the shareholders were duly informed by circular), to the 50 below the deep adit by Feb. 16, thus in effect draining the mine in the course of some six weeks' time.

The expenditure during the year on capital account in respect of the new works, the amount of which will be found on reference to the balance-sheet, has been provided for by the issue of the remaining debentures, the whole 10,000*l.* of which have now been subscribed for. In order to complete the new hauling machinery, and open out the mine to advantage with the least delay, it will be necessary that some further capital be raised, and the directors have in contemplation the issuing of the remaining unallotted shares of the company at an early date.

The CHAIRMAN, in moving the adoption of the report and accounts, said that with regard to the mine working account, the total outlay during the year had been 12,866*l.* 13s. 10d., of which a sum of 3001*l.* 14s. 9d. had been spent on capital account in respect of new works, which left 9864*l.* 19s. 1d. as mine working account, but this account included on this occasion not only the cost of the sinking of the new shaft, but likewise various other dead work done about the mine, such as the enlarging of the adit level for the reception of the rods and stands in connection with the new machinery and other work; therefore he was of opinion that much work had been charged to this account which strictly speaking might have been debited to capital account. He named this that shareholders might more readily understand the reason of what appeared to be such a large loss on the mine account. Passing on to the balance-sheet, it would be seen that the total estimated outlay on all the new works at Pari during the three years since the end of 1880 has been some 15,000*l.*, which seems a somewhat large sum for a small concern like their own; but the outlay was imperatively needed if proper justice was ever to be given to the capabilities of the Pari Mine, and they are now commencing to experience the benefits of this expenditure of 15,000*l.* The new watercourse will, doubtless, give them the power to work the mine to a depth of probably 150 fms. at least below the deep adit level, and to raise a much larger quantity of ore than they have ever raised previously as soon as the ground in depth was laid open for taking away. He would like to draw their attention to certain other items in the balance-sheet—the profit and loss account, which showed the large sum of more than 10,000*l.* to the debit. Now, the whole of this 10,000*l.* was not to his mind strictly speaking all loss, a good deal of the money having been spent in the work of reopening the mine, and, therefore, he considered that the directors in dealing with this account very shortly, as he supposed they would do, should keep this in view, and might, he thought, consider whether they could not consistently get rid of the debit balance by transferring the balances which stood to the credit of accounts on the other side of the balance-sheet—the reserve fund of 3000*l.* and the premium received on shares issued of some 8858*l.*, or together over 11,000*l.*, which would clear off the whole of the debit at profit and loss account, thus leaving any future legitimate profits for disposal in the shape of dividends or otherwise. He was only alluding to this point in a preliminary sense, and giving his own views on it, the matter not having as yet come before the directors for consideration. Going to the directors' report, he said that with regard to the prospects of the present year he hoped by the end of June they would be getting enough produce to cover all the working costs at the mine, although it must not be forgotten that it takes time to open up the good lode which by all accounts they had at the bottom of the mine. The loss for July last was some 60*l.* only. The successful working of the new machinery was a matter of congratulation to all, and he hoped before long to see the new shaft carried down considerably deeper. It was now 59 fms. below adit, or a little deeper than they had ever gone in the old mine. As to the raising of more capital the directors proposed to issue the remaining shares as soon as they could do so to advantage. He concluded by formally moving the reception and adoption of the report and accounts.

Mr. A. PIGGOTT FLETCHER (director), in seconding the resolution, said that he considered they might congratulate themselves on having now an ample supply of water to work the mine with, and on the successful working of the new machinery. Mr. Treloar had at first been of opinion that it might take two months' time to drain the old mine; but as a matter of fact the new machinery had enabled the water to be pumped out in about five weeks only, and that showed what the machinery was worth. He also expressed his conviction that a very great advantage must result from a new system of hauling from the mine by water-power instead of by mules, as heretofore, and considered that considerable expense would be eventually saved in the cost of keeping up such a large stock of mules as had to be utilised heretofore for hauling from the mine.

Mr. WILLIAMSON enquired whether the good ground in the mine was to be reached by means of driving underneath the old working?

The CHAIRMAN replied that this would be so when the new shaft was down a few fathoms deeper—say, to the 65 fm. level—a level would be driven south under the old workings, and after leaving a bar of ground sufficient to provide for the safety of the new workings, these latter would be carried on underneath the old mine.

Mr. T. TREGELLAS (director) remarked that as the new shaft was sunk further they would doubtless get into better lode therein.

Mr. JOHNSON asked for further information regarding the purchase-money paid for two shares in the Gaspar Mineral Rights?——The CHAIRMAN explained that it had been considered desirable to acquire an interest in these mineral rights which adjoined the company's property, as it was possible that their lode might eventually enter the Gaspar estate; but he did not wish that the shareholders should attach much importance to this purchase, it having been made more as a precautionary measure for the future, so as to give the company a legal footing in the property. Mr. Tregellas, who was much more conversant with the law of Brazil than he (the Chairman) was, could no doubt give some information as to what advantage accrued to us under the purchase.

Mr. TREGELLAS stated that assuming that the company's lode ever entered the Gaspar Mineral Rights, the advantage of the purchase was that the company, being now part owners of these rights could carry on operations on the lode without being prevented from working on it by the other owners, whose rights in other respects should be protected if they had ground in such workings.

Mr. FLAMANK desired to know if the directors had decided on the date of issue of the remaining shares of the company, and Mr. WILLIAMSON asked whether the directors expected these shares would be taken up?——The CHAIRMAN replied that he expected the shares would be offered to the shareholders in June next, and he entertained no doubt but that they would be readily taken up at that time. He would like to remind those present that a few years since they made a steady profit of some thousands a year, and he could not see why the mine should not give them 10,000*l.* a year profit when the stopes were properly opened out in depth. To his mind it was only a question of facilities and working capital, the good ore they felt sure was there in almost any quantity.

Mr. FLETCHER said that he himself did not think the Chairman's views over sanguine, when it was recollected what Mr. T. Tregellas had estimated in his report to the directors in the year 1880.

The CHAIRMAN, in reply to enquiries relative to the capacity of the stamping-mills at the mine, said that he anticipated the present mills of more than 50 heads could when properly furnished with water stamp fully 1500 tons per month. He referred them to the directors' tables of statistics in their report from what had been done in previous years, which would tend to corroborate his statement. It must be forgotten that Mr. Tregellas' report of 1880 on the capabilities of the mine was to a certain extent contingent on the erection of additional stamping power.

Mr. FLAMANK concurred in the views of the Chairman that the better the premium that was obtained for the new shares to be issued the less would be the delay in opening out the mine to the best advantage for large returns, therefore it seemed to him best for the company to delay a little the issuing of these shares, in view of better news expected from the mine very shortly.

No other shareholder offering any further remarks, the CHAIRMAN put the resolution to the meeting, and it was carried unanimously. Resolutions were then passed unanimously re-electing Messrs. Holland and Fletcher directors, and re-electing the auditor, Mr. A. W. Chalmers, the proceedings terminating with a hearty vote of thanks to Mr. Treloar and the staff at the mines for their exertions in the interest of the shareholders, and the usual complimentary vote to the Chairman and directors.

MECHERNICH (RHENISH PRUSSIA) MINING COMPANY.

The annual meeting of shareholders was held at Cologne on April 30.

The CHAIRMAN said: The past year, about which we have to report to you to-day, began under very unfavourable conditions for the lead mines and smelting works. The lead price, which at the beginning of the year was mks. 25½ per 100 kilos., fell during the whole of the year so rapidly as has seldom been witnessed. For to-day it is difficult to sell at mks. 21 per 100 kilos. to foreign countries, where by far the greater part of our lead production has to be disposed of. The apprehensions expressed in our last report have been realised even to an unexpected extent, and the prospect for the future is likewise not very reassuring, as the production, especially in Spain and America, is still increasing, and showing no signs of abatement. Our managing director will give you further particulars on this point. Although we are sorry at having to acquaint you with this serious state of things, we feel on the other hand great satisfaction in putting before you a balance-sheet which will by far exceed your expectations, a circumstance caused by very rich openings in the mine, the rational working of same, and the constant improvements carried out in our works, and not least by the excellent mercantile management. We beg to draw your attention to the following figures, showing our expenditure since the foundation of the company, on new erections, improvements, &c., and at the same time the sums written off the property:—

	Mining property.	Ground property and smelting works.	Railway property.	Machinery.
June, 1851 .....Marks	6,734,490·04	... 1,296,047·06	... 245,310	... 897,798·68
Additions	5,148,309·25	... 1,693,641·67	... 926,472·32	... 1,798,178·50
Written off	7,632,296·43	... 1,029,710·76	... 393,804·36	... 1,599,488·30
Balance	4,250,502·86	... 1,959,977·97	... 762,552	... 1,096,480·88

From these figures you will see that the additions reach the enormous sum of mks. 9,576,601·74—that is to say, nearly the amount of our subscribed capital, whilst we have written off mks. 10,6C0,259 85, so that the total of these accounts is mks. 1,083,698·11 less than at the foundation of our company, June 1, 1851. Besides this we had already in 1876 brought up our reserve fund to mks. 960,000. These figures speak for themselves, and you will no doubt be of our opinion that we can be content with the total result, and especially with the achievements of the past year. Taking this and the favourable financial position of our company into consideration we feel justified in asking you to declare out of the net proceeds mks. 1,579,090·42 a dividend of 15 per cent. per annum.

BALANCE.

Dr.	Marks.	Marks.
Mining property, 1832	4,608,318·37	
New works	94,1.4·49	
	4,790,562·86	
Written off	4·0,000 =	4,250,502·86
Ground property, 1832	872,805·66	
Addition	12,451·31 =	885,256·97
Offices and workmen's dwellings	265,719·	
Addition	8,502·92 =	274,221·92
Written off	15,047·92 =	259,174
Smelting works, 1832	3.0,407	
Addition	93,758 29 =	474,165·29
Written off	47,416·29 =	426,749
Inn and hospital for miners, 1:82	261.304·75	
Addition	46,734·26 =	308,039·01
Written off	9,241·01 =	298,798
Railway property, 1832	784,864	
Addition	17,822·38 =	80?,686·33
Written off	40,1.4·38 =	762,552
New wire-rope railway		110,425·93
Machinery, 1832	1,088,843.7	
Addition	81,401·16	
	1,170,24 ·33	
Written off	73,755·45 =	1,096,438·33
Debtors		2,028,917·07
Materials		398,849·07
Stock of ores and metal		684,105
Cash, bills, and funds		1,233,511·93
		12,433,330·74
Cr.		
Capital		9,600,000
Creditors		294,240·32
Reserve fund		960,000
Profits	2,310,532·62	
Written off	731,442·20 =	1,579,090·42
		12,433,330·74

The MANAGING DIRECTOR said: The balance which has just been presented to you shows a very favourable result, and has, considering that during 1883 the average price of lead was only about mks. 23½ per 100 kilos., no doubt exceeded the expectation of a great many. This result has been achieved partly through having contracted at the right moment and partly by the increased production caused by rich openings in the mine. Unfortunately the crisis in the lead trade has not yet taken a turn so much hoped for by the producers. The consumption of German lead could not during the last year keep pace with the production, which circumstance led to a further fall in the price of lead. The other causes for the deterioration of prices, explained to you in my last report, still continue—Spain and America remain, without mentioning the probable opening of lead mines in other countries, our principal competitors. Although in the first-named country several mines had to reduce their productions or cease working altogether in consequence of the low prices, there have on the other hand been mines opened which through their rich silver ore pay well even in the present state of the market. These mines, in which lead is considered rather a by-product, are worked to the greatest extent possible. The Spanish mines are also made more productive and profitable through the introduction of better methods of dressing and smelting the ores, and through the improved communications in that country. A speedy decrease in the Spanish production is, therefore, although very desirable not to be expected just now. Similar conditions exist in America, where the production has already come up to that of Spain. Whilst in 1872 America produced only 25,800 tons the production has in ten years increased to 132,890 tons, and in the first half of the last year reached already 72,000 tons. Up to the present America with a population of only 6,000,000 more than Germany has consumed this large quantity, probably through the extensive buildings going on there, but with the further increase in production and possibly less building this could hardly be expected. We should then find the over-production of America would come into competition with the European markets. Under these circumstances and with the steady development of the lead industry in the two named countries we can hardly expect a return of the former high prices of lead, and must, therefore, keep in view the causes of depression in this article. Recognising this critical state the Saxon Government has for the financial year 1884-85 granted to Saxon mines a support of mks. 2 on each 1 lb. of silver and each 1 cwt. of lead in the ores delivered so long as the price of silver keeps under mks. 77 per 1 lb. and of lead under mks. 14 per 1 cwt., which fact contrasts the Prussian mining tax and valuation of the ores undertaken for this purpose at prices which can never be realised. As we feared in our last report several lead mines on the left bank of the Rhine, which raised lead ore containing little silver, had to cease working, whereby during the last two years about 1500 workmen had to be dismissed. Even the Mechernich Mining Company has been forced to cease working in some poorer parts of the mine, and to dismiss 200 workmen. We had to open richer and more easily worked parts of our mine. This enabled us thus far to obtain a favourable result, which, however, cannot continue if the price of lead does not soon recover, or should it fall still lower. In the last report I mentioned that the price had fallen since 1878 about 25 per cent. below the average price of the last 25 years, and was then mks. 25 per 100 kilos. To-day it is difficult to sell at mks. 21·50 in Germany or mks. 21 to other countries. We have, therefore, a reduction of 45 per cent. during the above-mentioned period. Silver is also less valuable. Our average price last year was mks. 152·20 per kilo., and is now only mks. 149·50; therefore, mks. 2·70 per kilo. lower. The average price during last year was in London:—

	English.	Spanish.
January	£13 14 6	£13 5 3
February	13 7 6	13 2 2
March	13 8 5	13 1 10
April	13 7 6	13 0 5
May	13 3 0	12 14 6
June	12 16 9	12 11 1
July	12 14 4	12 8 10
August	12 11 6	12 6 6
September	12 11 3	12 6 1
October	12 4 9	11 19 3
November	12 0 0	11 13 1
December	12 6 9	12 0 9
Average price	£12 17 2	£12 10 10
Equal at Mechernich to	mks. 23·75	mks. 23·15

The average price on the Paris Exchange was:—

January	Frs. 35	July	Frs. 32·50
February	34·25	August	32
March	34·28	September	3 ·93
April	33·81	October	3 ·25
May	32·93	November	30·50
June	32·40	December	31·12

Average price equal at Mechernich to mks. 23·45.

The quotations of the Rotterdam Exchange do not offer any reliable criterion, as they differ too much from the price of real transactions. The reduction in the price of lead and silver, as shown above, are very serious facts, which before long must imperil the existence of many mines and smelting works as well as the living of the workmen and their families. Everything has been done by the producers of lead to reduce the cost of production to the lowest possible level. A further reduction through lowering the wages of the men employed seems impracticable. There remains as the only remedy the reduction of the freight on some materials used in smelting, and on lead itself. For this purpose the Rhenish miners and smelters petitioned the Prussian Government, but without success. The mining was again confined to the concession Meinerzhagener Bleiberg. After the open-cast of Virginia had been abandoned in 1882, in consequence of the poorness of the stone, which did not admit of its being worked with any profit, we had also, with still lower prices, to cease working in the eastern open-cast. Since then the working is carried on underground, where the shafts of Schafberg and Virginia participate in equal proportions. The working in the shaft Virginia is lighted by electricity, which powerful light admits of safer working and greater utilisation of the ore. The introduction of electric light in shaft Schafberg is now in progress. The mine produced during the last year 643 tons Potter's ore, and 36,524 tons lead ore. At Schafberg the working shaft has been rebuilt, but the washing-room has, on account of other building operations, not been finished, and it is still a question if the washing machines will in future be put in motion by steam as formerly, or by gas-engines. The ore stores of the stamping works have been enlarged by 95 cubic metres. At our railway station, Mechernich, a dwelling for stationmaster and signalman has been erected.

The smelting works produced last year 25,581 tons of lead and 4369 kilos. silver. The nine blast-furnaces of the smelting works have been rebuilt on an improved system. The materials for the furnaces are now discharged by tilting-carts, which are lifted up to the mouth of the furnace. For the transport of the lime and iron stone from the pit at Eiserfey to the smelting works a wire-rope railway, 3·80 kilos. long, has been built, and has been in use since December. The vans are emptied into boxes holding 471 tons, and which reach to the mouth of the furnace, so that lime and iron stone are put into the furnace without further cost. The number of miners averaged 36·9 men during the year. The average wages were for the shift of eight hours underground works mks. 2·21, and for shift of 12 hours in the open-cast mks. 2·19. The number of persons conveyed by our railway was 158,549, or 19,706 more than last year. Bread, potatoes, beer, and coals have, as formerly, been sold to miners by the company under cost price. The hospital of the company with inventory has been handed over to the companionship of miners for their use, and the nursing is done by five Sisters of Mercy. Our inn has been more and more used by miners—from 171 men in January to 264 in December. Taxes paid by the company during last year amounted to mks. 145,594·34. The companionship of miners numbered last year 1351 permanent and 2028 temporary members. The pensioners of same were 80 disabled miners, 195 widows, 272 orphans. According to the report of the physician 2313 miners fell ill during 1883, 40 of whom remained under treatment at the end of the year. The income of the companionship amounted to mks. 86,211·07, and the expenses to mks. 84,615·18; the capital stood at the end of the year at mks. 169,092 29. The whole report gives you a proof of the successful development of our affairs, and I shall only add that the working capital, consisting of the following accounts:—Debtors, material, ore and metal, bills, and cash amounts to mks. 4,278,379·96, against which rank—creditors, mks. 588,609·75, consisting of mks. 61,000 railway freight due for December; mks. 60,000 owing wages and other amounts of invoices during December. Debtors represent credits at banking houses, and not yet paid for invoices. Materials are valued at cost price, but ores and metals under same. Funds consists of railway shares and Prussian Consols. With our good financial position, the perfect state of all the working in our mines, and the contracts already concluded for 1884, we may reasonably expect another satisfactory dividend for this year, although it will not be so high as last year.

NERBUDDA COAL AND IRON COMPANY.

The twenty-fourth ordinary general meeting of shareholders was held at the Cannon-street Hotel, on Tuesday,

Mr. S. J. WILDE in the chair.

Mr. FRED. R. BLUETT (the secretary) read the notice calling the meeting.

The CHAIRMAN said he was more happy to meet the shareholders on this occasion than on many previous ones, because he thought they would all agree that the company was in a far better position. With regard to the sales, which was an interesting point, for on the sales depended the dividend, he might say that the directors had received a telegram stating that the sales of coal up to the end of April—namely, for the first four months of the year, amounted to 12,250 tons, which was nearly equal to the total number of tons produced in the first nine months of the previous year. But the shareholders must not be surprised if this rate of output fell off during the monsoon. This year they had to build a bridge over the river in order to facilitate the delivery of the coals from the Helen Pit to the terminus, which would not be completed till after the monsoon; it must, therefore, not be expected that the output for the 12 months would be three times the amount of the first four months. The greatest sale they had ever had in any previous year was in 1875, when they sold 18,500 tons. But that was during Mr. Maynard's time, but it was not from fair raisings, because Mr. Maynard did not develope the mine whilst he was doing it. Now they were working on a different footing, and what they were raising now they would substantially expect to keep up. The receipts were a little over last year, and also the expenditure. The Helen Pit had been drained to the present workings, and as they went towards this pit the more expensive it was to drain away the water. Since the manager's report was sent home, about two mails ago, the directors had received a letter to say that the manager had holed through from the present workings to the Helen Pit; and, therefore, the question of water in the workings was done away with entirely. The capital expenditure was drawing to a close very rapidly. The report of the manager was too long to print and circulate amongst the shareholders, but he would read an extract from it on that point:—"Our capital expenses are nearly at an end for the present, as nothing will be required in the way of pumping or winding machinery, only the new boilers mentioned in my last year's report." He might mention that one of those boilers would go to capital and the other probably to revenue, as it replaced another. The report went on to say:—"The chief thing now required to make the Helen Pit a complete success is a bridge over the Sita Rewah river, and the extension of the Great Indian Peninsula line to the Helen Pit's mouth." The directors had determined under the advice of Mr. Manning, one of the directors, to erect a bridge over that river with old rails. It would be a permanent bridge, capable of carrying one of the heavy Great Indian Peninsula wagons, but not capable of carrying a locomotive. The trucks would be worked over the bridge by means of a rope from an engine, so as to reduce the horse labour. The directors were very much indebted to Mr. Manning for his suggestion. Mr. Manning had erected similar bridges in Ceylon, which had answered exceedingly well. The report further stated:—"The difficulty in getting labour is, I think, decreasing, and though our attendance of underground workmen still fluctuates a good deal, and is much influenced by the agricultural seasons, the attendance, on the whole, is better, and I am of opinion, owing to the extension of our works and the increased output becoming known, contractors who are able to command labour will be more willing to come from a distance and bring their coolies with them." There was an advantage in getting coolies from a distance, as they were not so likely to go away to attend to their farms and land. The manager was still able to get a certain amount of coal from the old fire coal workings; at an expense of 180 rupees coal of the value of 2000 rupees had been raised from the workings. The pumps at the Helen pit were now complete and ready for working. The profit on the working enabled the directors to declare a dividend of 1s. 9d. per share; but (as he suggested last year when a call of only 2s. 6d. per share was made instead of 5s.) they must make another call of 2s. 6d. per share in order to make the capital account square, because they had been using revenue for the purposes of capital. He should be very much astonished if this was not the last call, unless at some future time they should require to open a new colliery upon some other part of the property. If so there was 25,000*l.* to be called up if necessary; but from all they saw and knew of the present mine he thought the present colliery would last for some years to come without any necessity to increase it. He moved the adoption of the report and accounts.——Mr. H. DOUGHTY BROWNE seconded the motion.

Mr. PATTON asked why the money was sent home to this country if it had afterwards to be sent back again, more especially as the loss by exchange was about 3s. in the 1*l.*?——The CHAIRMAN said they did not send any money to India. The money from the call was to replace capital expended out of revenue. Then there were debentures becoming due in July, and there were the boilers to be paid for.

Mr. DESCOU asked how long the monsoon lasted?——Mr. MANNING said it began in the middle of June and lasted till the middle of September.

Mr. DESCOU asked whether the company would derived any benefit from the Helen Pit after the cessation of the monsoon?——The CHAIRMAN said they hoped to do so; at present the coal was drawn from the Helen Pit by means of an inclined plane, and they could not expect to largely increase the output from that pit until they finished the bridge, and it would be some time before it was completed. The advantage of the Helen Pit being at work was that it drained the mine.

A SHAREHOLDER asked what was the output of coal for the first four months of 1883?——Mr. H. DOUGHTY BROWNE: It was 5528 tons.

The resolution for the adoption of the report and accounts was then put and carried.

On the motion of the CHAIRMAN, seconded by Mr. MANNING, a dividend of 1s. 9d. per share was then declared.

On the motion of the CHAIRMAN, seconded by Mr. H. DOUGHTY BROWNE, the retiring directors, Mr. J. R. Corbett and Mr. T. S. Haviside, were re-elected.

The election by the directors of Mr. W. Westcott, as auditor in the place of Mr. Waddell, was confirmed; and a subsequent resolution was also passed appointing him auditor of the company.

A vote of thanks to the Chairman and directors closed the proceedings.

[For remainder of Meetings see this day's Journal.

BRITISH ENTERPRISE IN VENEZUELA.

It is really a very discouraging fact, say Messrs. De Rojas Brothers and Co., in their Anglo-Venezuelan Review for May, that neither of the Venezuelan gold mining companies originated in London has yet paid a dividend, and that the only one which pays, and has for some years been distributing fabulous sums as dividends was not launched in England, but was started and is owned entirely by natives of the country. Is this an argument in favour of the Venezuelan system of conducting mining operations, or is it a condemnation of English administration? Although there are many special circumstances to be considered before arriving at a definite conclusion, we are of opinion that the fact itself should be seriously considered, particularly when we are assured—for it is a fact—that the failure of the British enterprises in Venezuela gold mines has not generally arisen from want of gold in the fields, but from many other causes. Many Venezuelan gold properties have been offered to the British public at such exorbitant prices, that even admitting a proper management of the mines, and the possibility of the luckiest discoveries and results from their working, they would never have been able to pay more than a small dividend to the shareholders. This system of paying such exorbitant prices for such properties has entirely changed the nature of the mining business, and the shares of several gold companies, instead of representing a serious investment of capital to derive a regular income therefrom, have become objects of foolish speculation in the hands of some of the vendors of the properties, and of some of the financiers who have originated the companies. Where such an erroneous system has been adopted, the prices of the shares have gone down, and it is almost an impossibility to afterwards raise them. The *bona fide* shareholders who have purchased at par will always have to regret the loss of from 75 to 80 per cent. of their capital by the adoption of such an erroneous system.

Many follies have also been committed at the gold fields of Venezuela, and superfluous expenses have been incurred in many instances. But there is another danger which will in the future spoil the success of foreign enterprises in the Republic of Venezuela, unless the boards of the companies sternly forbid their employees there to resort to it, that is, the expedient of bribing the minor local authorities to decide in their favour contentions in regard to the possession of the land, or to the rights contained therein. We have been informed that large sums of money have been spent in Guayana in this manner. We protest energetically against such a policy, not only for the honour of our country, but for the protection of foreign capital invested in Venezuela. Money is very tempting, and we admit that a minor authority, generally represented in such places by a very ignorant and oftentimes needy man, is open to receive a bribe, and after the first step in this path has been taken, it is difficult to recede. The bribing scale has no fixed limit; thus capital subscribed by shareholders employed at first in comparatively small amounts to warp the decisions of a minor authority, is increased in geometrical progression as we ascend to superior authorities until all the proceeds of a mine are misapplied in this injudicious manner. As it is our intention to return to this subject in a future number we will take leave of it for the present, merely repeating the question at the commencement of this article:—Does the non-success of the Venezuelan gold mining ventures having their origin in London arise from the system of English administration?

Although the brilliant history of El Callao Mine has been already given in the *Mining Journal* so much interest is at present taken in Venezuelan mining matters that some extracts from Messrs. De Rojas Brothers' *resume* are worth reproducing. In 1871 El Callao Company was first started with a capital of 48000*l.*, represented by 60 coupons of 80*l.* each. Additional capital was shortly added to the extent of 8080*l.*, represented by 101 additional coupons, the combined issues representing 161 coupons, or 12,880*l.* In 1873, in consequence of the good prospect of the mine, these 161 coupons were converted into 322 coupons of 160*l.* each, the nominal capital of the company being thus increased to 51,520*l.* In 1883 these were converted at the rate of 100 shares of 40*l.* each for every coupon, and the nominal capital of the company thus became represented by 32,200 shares of 40*l.* each, or, say, 1,288,000*l.*, the dividends from which were to be paid at the option of the shareholders, either in Venezuela at the offices of the company, or in London at Messrs. Baring Brothers and Co., financial agent of the same. The conversions already described show that the original capital, which in 1871 amounted to 12,880*l.*, has been increased a hundred fold. The dividends paid by the company on their actual capital of 1,288,000*l.* have been 19 per cent. per annum—that is to say, 1·900 per cent. on the original capital. In the course of this year they will pay a larger dividend, because the production of gold is increasing. In January the return amounted to 14,000 ozs.; in February to 14,500 ozs.; in March to 17,000 ozs.; and in the first fortnight of April, as per telegraph advice, to 10,000 ozs. From 1879 to 1881 the average of free gold per ton of quartz crushed was 3 ozs.: in 1882, 4¾ ozs.; and in 1883, 6 ozs.; and in the first quarter of the present year the average has been 7 ozs. From 1871 to 1883 inclusive El Callao has produced 618,389 ozs. of gold, representing an approximate value of 2,331,550*l.*, and the company have distributed dividends during the same period amounting to 817,880*l.* sterling, augmenting at the same time the reserve fund to 40,000*l.* When we take into consideration that the company is erecting more machinery, and also opening a new shaft (No. 6), which will be completed in five or six months, there is reason to believe that the yield of gold will be about doubled.

The litigation in Venezuela between the representatives of the Nacupai and Chile Companies is, as has been announced in the *Mining Journal*, settled in favour of the Chile Company, but Messrs. De Rojas Brothers still advocate a compromise on the ground that the last decision may be appealed against and reversed. The maxim that "a bad compromise is better than a good verdict" is no doubt worthy of consideration, but at the same time the facts of the case, even as put forward by Messrs. De Rojas Brothers, are such that the present decision is not likely to be disturbed. The Venezuelan Government is admittedly as unstable as any in the world, yet neither the Government—which clique are for the moment in power really makes very little difference—nor the Courts altogether ignore the universal principles of law and equity. In 1866 the Venezuela Government granted Mr. J. B. Austin ten mining concessions in Guayana. In 1869 Austin sold to the Orinoco Exploring Mining Company, which in 1878 suspended payment and was declared in default. The property was sold by the Court in 1880 to C. C. Fitzgerald. In 1881 Fitzgerald sold and gave possession to the Nouveau Monde Company, which, however, failed to complete the purchase, and hence the property reverted to Fitzgerald, who, thereupon, resold it to Palazzi, Palazzi in turn selling to Mavrogordato and Schiari; these latter reselling to the Nacupai Company. Now, it is evident that according to all accepted principles of law the Nouveau Monde Company lost whatever rights they may have had in the matter when they failed in their contract with Fitzgerald, and the confusion which has arisen in Venezuela may probably be traced to the fact that the Nouveau Monde and the Nacupai Companies were virtually under one administration—one set of wire-pullers acting for both concerns.

The real point at issue, and that which the Federal Executive of the Venezuelan Government has now settled was whether the Orinoco Company's default in 1878 was complete and involved a forfeiture of the concessions known as Austin 1 to Austin 10 inclusive. About the time of the default in 1878—it matters nothing whether it was before or after the actual failure of the Orinoco Company—Edmund Snell was authorised by the Chairman of the Orinoco Company to take over Austin 9 and as between the Government and Snell everything would turn upon the question whether Snell was working the property so as to comply with the Venezuelan Mining Law between 1878 and 1880. If he were so working his title in 1880 was sound and irrevocable except for default—which is not even now alleged—so that the Tribunal which authorised the auction in 1880 was as much *ultra vires* in attempting to give Fitzgerald possession of Austin 9 as it would have been in attempting to give him possession of El Callao. That Snell was really in possession and properly working Austin 9 at the date named seems certain or the Government of Guayana would not in February 1881 have decreed him in possession Mr. Nicholson (and consequently the Chile Company) holds under Snell's title, and not as successor of Austin. The Venezuelan Government appear now to have done what should have been done three years ago. The Federal Executive have declared the whole of the Austin concession null and void, and thus placed itself in a position to secure the fair and energetic working of the mines in future. Messrs. De Rojas Brothers and Co. state that the Official Gazette of Caracas contains the following decree:—

UNITED STATES OF VENEZUELA—Department of Fomento; Caracas, March 31, 1884, the 21st year of the Law, and 26th of the Federation.

"As the mining concessions granted to Mr. J. B. Austin by the Government on Nov. 5, 1867, have not been worked in accordance with the spirit and letter of the Code of Mines of 1854, to which they were subject, the President of the Republic, with the affirmative vote of the Federal Council, resolved on the 11th of this month to declare, and did declare null and void the concessions numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10, into which the 400 mines were divided, and which were granted by the Government to J. B. Austin in the contract before-mentioned."

Issued and published for the Federal Executive, M. CARABANO.

The Nacupai Company will probably have no difficulty in securing their title to such of the concessions, as they have worked in full compliance with the Code of Mines of 1854, and the Chile Company will be equally placed in undisputed possession of such concessions as they have worked in accordance with the law of 1854, so that the representatives of both companies may henceforth work harmoniously as neighbours with advantage to the Republic of Venezuela, and with more profit to their respective shareholders.

VENEZUELAN RAILWAYS.—Only two lines of railway in Venezuela can at the present time be considered as serious enterprises; one is the old Bolivar Railway from Tucacas to La Luz, belonging to the Quebrada Railway, Land, and Copper Company, of this city, and the other, the line opened last year from La Guayra to the city of Caracas, and owned by the La Guayra and Caracas Railway Company. With regard to the first of these lines Messrs. De Rojas Brothers and Co., state that the Government of Venezuela has offered a concession for its prolongation from La Luz to the town of Barquisimeto, a distance of about 60 miles. If this new line is constructed, the general results will be most satisfactory, as all the produce of the western, the richest states of Venezuela, will be brought to the seaboard by this railway, thus constituting it the great trunk line of the Venezuelan railway system. We have heard with much satisfaction that Mr. N. G. Burch, managing director of the company, sailed about six weeks since for Venezuela to inspect their various properties, and to endeavour to effect an arrangement should any obstacles intervene to prevent the complete success of the amalgamated company. The shareholders of the La Guayra and Caracas Railway Company must be very satisfied with the result of their venture. It is most promising, and we shall not be surprised if, in spite of the necessary repairs which every new line requires, and particularly during the rainy season, the company will be in a position in the course of this year to pay a fair dividend.

THE TIN DEPOSITS OF AUSTRALIA.

An important and interesting paper prepared by Mr. STEPHEN S. VALE, manager of the English and Australian Copper Company's Works at Waratah, was read at the recent meeting of the Mining Institute of Cornwall (the President, Mr. R. J. FRECHEVILLE, Her Majesty's Inspector of Mines, in the chair). In order to show the vigour with which the tin industry had been followed, the author referred briefly to its history. It was said to have been first noticed by Dr. Bass, of Her Majesty's ship Reliance, but his (Capt. Vale's) first acquaintance with it was in 1853, when some of the black sand was brought from the Oven's Diggings, in Victoria, by his father. This black sand was then the bugbear of the gold miners of that district, they having great difficulty in extracting it from the gold. It was not until 1870 that any real idea was formed of its value, or any proper search made for it, nor until 1872 that any considerable quantity was raised, the figures for that year being 896 tons, valued at 47,000*l.* The extent of country through which the tin is distributed is very great. It is to be found at intervals along the great Australian Cordillera, but principally on the western slopes, running from south to north, commencing at Tasmania (which geologically is a part of Australia), and extending to Somerset, at the extreme end of the York peninsula, in Northern Queensland. The granites seem to have turned to the westward, as the tin had been found at Mount Wells, in the northern part of South Australia. As far as at present known, there were three points along this course where the development of tin had been very extensive. Two of these points comprised a strip of country 160 to 180 miles from south to north, and from 50 to 90 miles from east to west, and included the Mount Bischoff district, and the third a strip measuring about 200 miles by 50. In addition to these grand fields there were the Mount Wells deposits in South Australia, the extent of which was as yet undetermined. Here, as in all other parts of the world where tin had been discovered, it was found in connection with the euritic granites, and the greatest development of tin had taken place in a large extent of granite country. The characteristic of the tin granite was chiefly euritic, but it sometimes passed into a micaceous; both, however, contained tin, and were evidently species of the same rock.

All Australian tin is free from other metals, and this fact probably accounted for its high price in the European markets. There was a marked difference in the character of the tinstone from the two classes of granite, that from the euritic being more highly and more generally crystallised and transparent. It was, of course, from the alluvial deposits, and the exposure of certain portions of the underlying miocenes by denudation that tin was first obtained, and these had hitherto formed the principal source of its workings. The quantity to be raised from these sources it was impossible to predict; it could only be said to be enormous, and it was only fair to suppose that ten years' work had not discovered, much less worked out, the whole of these alluvial gravels. It was quite certain that for four or five years the whole of the tin was derived from these deposits, and much of the ground which was worked at first in a very rude manner, would be, and, in fact, was being reworked; and the constant improvements in crushing and dressing machinery would render many fields payable which were not so at present. Consequently were there no other sources of supply but the alluvial deposits, which extended for about 400 miles along the granite country, there would be work for many years to come; but the second, and one of most important sources of tin, was the old river and creek beds and drifts. These deposits were underlying nearly the whole of the alluvial deposits, and consequently many sources which were supposed to have been exhausted had, by boring, increased in richness. The deposits had been buried by the large outbursts of volcanic lava which at one time covered a large part of the surrounding country. In all cases where tin was found the basalt joined the granite, and it was where these conjunctions took place that the deep leads of tin were found. These deposits also occurred to an enormous extent, and inasmuch as they had only been worked during the last five years, it was quite evident that only a small portion of them had been discovered. The credit of first calling attention to these deposits belonged, in his opinion, to Mr. C. S. Wilkinson, the Government geologist. In that gentleman's opinion the old river system and the new had the same bearing, so that taking the present discoveries into consideration, and making allowance for the extra thickness and richness of the deposits, fully 30 years' work remained in store, but evidently even this was only a part of their riches.

The principal alluvial workings in New South Wales were situated in a locality called Vegetable Creek, about 400 miles north of Sydney. The creek had been worked for about five miles, with various, but unusually great success. Some ground contained the tin at surface, whilst in other parts it had been found at various depths. In one mine the length of the lead of tin was not known, but it had been proved payable for a width of 300 ft., having an average thickness of wash dirt of 3 ft., and containing about 80 lbs. of ore to the load of 60 buckets. The Great Britain Company's property at the head of the creek comprised about 500 acres. The wash dirt here was not so rich as in the lower portions of the creek, but the tin was more evenly distributed. The third, and in future the permanent source of tin supply, were the veins in the granites themselves. These had been and would be worked, but in consequence of the more easily worked alluvial deposits little attention was being paid to them at present. These veins were found along the whole course of the granite formations wherever the alluvial ground was discovered, but had not yet in any case proved to be permanent. They varied in thickness from a mere thread to a foot, and were rarely followed to a greater depth than from 20 to 30 ft., at which depth they died out. Occasionally these strings of ore ran together, and formed huge masses of ore. At one place—Butchardt's Mine, near Juverell lumps of solid ore were obtained, weighing from a few ounces to 50 lbs. These lumps assayed over 76 per cent. of tin. The veins appeared to have the same course as the granites.

What he had written with regard to the irregular mode of the occurrence of the veins was from his knowledge of New South Wales country, but from a letter which he had received from a friend on the Herbert River fields in Queensland he found that the same circumstances occurred there, and this would be of importance in considering future observations. This friend wrote as follows:—"The mines are not nearly so dazzling as when at first known. We do not find the rich outcrops continue, and have closed several places in consequence, choosing to lose the first investments rather than risk money at present in exploration" Although these veins were not continuous they were plentiful, and scarcely a month passed without some new discovery being made, and this would continue. The deposition, present working, and future of tin in Australia were analogous to that of gold. As with gold so with tin, both had been worked at first where richest and most easily obtained. Afterwards the deep leads had been discovered, and companies with some capital formed in a more systematic manner, by which gold and tin ground once abandoned had been worked. The necessities of the case would bring out the inventions required to treat the poor reefs, and would create a permanent industry. Having referred to the method at present adopted for the treatment of the alluvial deposits, Capt. Vale concluded by furnishing statistics relative to the shipments of tin from Australia and Tasmania during 1882, showing a total export from those countries of 10,689 tons, which, averaged at 90*l.* a ton, represented a total value of 962,010*l.* Mr. Vale sent a very ingeniously-prepared map, on which the various spots referred to in the paper were delineated, and a valuable collection of specimens, also forwarded by him, afforded much interest to those present, especially the mine agents.

The question of the richness and extent of the Australian tin deposits was, the Chairman remarked in opening the discussion which followed the reading of the paper, one of vital importance to Cornwall. The large quantities of tin being imported from that country, and the rich discoveries that they were continually hearing of, weighed rather heavily upon them, and created at times a very uneasy feeling at home. Cornwall was pre-eminently a tin-producing district, and had been so for hundreds of years, and those who were acquainted with the history of mining in Cornwall would, he thought, have gathered from Mr. Vale's paper that the prospects of tin mining in Australia were not so very brilliant; in fact, the paper had relieved his mind of a great weight. Hope had dawned upon him, and he had come to the conclusion that Australia was not such a formidable rival, after all. With regard to the alluvial tin to be washed out of existing rivers and creeks, he predicted that that source of production was seeing its best days, if it had not seen them. About 10 years' work had been done, and if tin was found in rivers and creeks in a granite country he thought they would soon discover all the most valuable sources. With reference to the leads, there was one comforting feature about that—that these leads were covered with basalt, and hence to get at them the miners would have to resort to boring. Another feature mentioned in the paper was one which was fatal to mining, and that was a lack of water. Water was essential for the proper dressing of ore, for the dry dressing process referred to by Mr. Vale had been tried for years, but had never successfully answered its purpose. With regard to the third source of production mentioned—the veins—Mr. Vale stated that they were not true veins, and hence in his (the Chairman's) opinion, they could not be looked upon as permanent sources of production. When the leads died out at a depth of 20 or 30 ft. they were of no use for extensive mining. As to the introduction of improved appliances for working the poor reefs, he did not think that reefs of such a size were worth any great outlay in appliances; but even supposing these appliances should be invented, they in Cornwall would be in a far better position than the Australians, because they had millions of fathoms of ground laid open which they only required improved appliances to work. He did not wish the Australians any harm. No doubt they would have their share of tin, and Cornwall would have its share, but in the course of a few years he thought it would be found that Cornwall had the largest share.

Several of the speakers appear still to entertain the opinion that the Australian tin deposits will not prove permanent competitors to Cornwall, although the statistics certainly show that, at prices which are so low as to almost close Cornish mines, the Australian properties can be made to yield profits. Capt. Craze thought they might infer from the remarks in the paper that there were already signs of a falling off in the deposits of tin, precisely the same as they had seen in connection with the deposits of gold. They could not expect much from such veins as those spoken of by Mr. Vale, when they remembered that in their own mines they had lodes 8 and 10 fms. wide. Capt. Josiah Thomas said it struck him that the tin deposits mentioned in the paper were similar to those which they had seen in the Goss Moor, near St. Columb, and at Dartmoor. There was a large quantity of stream tin in those mines, and in the valleys veins similar to those described, but when they got down into the granite they died out. It was sometimes supposed that where large deposits of tin were found at surface, lodes of necessity, would be discovered deeper, but he thought that was an incorrect hypothesis. For instance, in the great mining district of Cornwall they found no tin at surface, whilst their lodes went richer in depth. He was at the bottom of Dolcoath about four hours previous to that meeting, and he was pleased to say the lode was becoming larger and richer than ever. They were more than 400 fms. deep, and the lode in the bottom of the mine was producing 300 lbs. of tin to the ton of stuff. There was every reason to hope that other mines by going deeper would become richer. Capt. Bishop thought the Australians had been working all their best ground where water could be obtained, and, having sunk pits at intervals in a large expanse of ground and found alluvial deposits, had presumed that the whole expanse of ground contained tin.

The views of the previous speakers were not supported by Mr. J. L. Bolden, who said that if the Australians could not get water they would look about for other appliances to dress their tin, and he believed improved appliances would be forthcoming, and that they would be in a better position to dress their tin in future than they had been in the past. The alluvial deposits would, in his opinion, last for a very long time, and they were told in the paper that fresh discoveries were constantly being made. Consequently as our mines became poorer, and the Cornish miners were obliged to emigrate, he believed they would set to work and make greater discoveries, and from the alluvial deposits alone he thought they might expect large quantities of tin, which would tend to keep down the price of the metal in the English market. The important question in the opinion of Capt. Rich was whether or not the Australians were making large profits. He quite believed they would have large re-

turns of tin from these alluvial deposits, but believed Cornwall would be able to hold its own, provided they received liberal treatment from the lords. No reasonable man could shut his eyes to the fact that in mines where they had to go down half-a-mile they could not compete with their kith and kin across the water, who were only mining at surface. Then, again, those abroad were not called upon to pay 100*l.* an acre for their land. With the lodes they had in Cornwall, provided they had fair play, he thought they would be able to hold their own. So far as Cornwall was concerned, they always found that the worst lodes existed where the best streams were found.

THEORIES ON THE FORMATION OF MINERAL VEINS.—No. III.*

BY FRIDOLIN SANDBERGER.

We are met, therefore, by questions of a different kind, which can not be satisfactorily solved without an exact chemical investigation of the rocks. (I hope to be able to solve some of these questions next year. American State geologists having kindly furnished me with the necessary material. It is certainly worthy of notice that enquiries showed that there was not a single specimen of these curious occurrences in the scientific collections of Germany, so that until now they have been judged by reports, a method which has certainly its great dangers.) This, however, will not prevent my attempting an explanation corresponding as much as possible with the facts as now known concerning the formation of the springs of California and Nevada, which deposit siliceous sinter carrying cinnabar. I start with the opinion that the quicksilver ores and the gold and silver in them have been derived from veins of greater age, or from stratified rocks impregnated with ores; that they were dissolved by the springs, and were, therefore, redeposited with the siliceous sinter. Though in a different form and on a much larger scale, this would present an analogy to the deposits of metals in the ochres of carbonated springs issuing from ore veins or rocks carrying ore. In itself it is striking that these siliceous sinter springs deposit exclusively those metals which occur in the older ore deposits of California and Nevada, and it is certainly worthy of notice that they are accompanied by hydrocarbons which are elsewhere not observed in connection with siliceous sinter, but which occur very frequently in the older deposits of California, and can only exist originally in the sedimentary rocks (cretaceous limestones) leached by the geysers. Now, it is well known that sulphide of mercury is soluble in alkaline sulphides, and sulphide of barium, forming with them compounds ($RS.HgS+5aq$) at a much lower temperature (45° C.) than that of the Sulphur Bank Springs (72° C.). There is, therefore, no difficulty in the leaching of older quicksilver deposits by such springs. The solubility, too, of sulphide of gold in the sulphides of the alkalies is a well-known fact. I cannot judge in what form the solution has taken place of the silver in the argentiferous iron pyrites only incidentally mentioned in the reports. Solutions which carry alkaline sulphides besides a large quantity of alkaline carbonates in cooling first deposit the silica dissolved, and then, as soon as they come into contact with the air, undergo an oxidation to hyposulphites, which are decomposed, forming free sulphur and sulphites. The latter finally become sulphates. The great quantity of free sulphur in the Sulphur Bank deposit is due to the decomposition of the hyposulphites and the oxidation of the escaping free sulphureted hydrogen. The double salt of sulphide of an alkali and of quicksilver contributes to it also, because finally it decomposes to alkaline sulphates, sulphur, and sulphide of mercury. The sulphide of gold dissolved in the sulphide of sodium and deposited from the spring is soon decomposed, forming free gold and sulphuric acid. Such is the manner in which I believe the sinter and the ores of Sulphur Bank and similar deposits in California and Nevada have been formed, and I hold the opinion that no well-founded objection can be raised against it until the absence of quicksilver in the form of original silicates has been proved in the trachytic rocks of the Uncle Sam volcano and in the basalt of Steamboat Springs.

It is well known that, as in the geyser regions of Iceland, New Zealand, and Wyoming, there are extinct geysers in California, which may be easily recognised by their shape and the character of their deposits. It would be worth while to enquire whether they have deposited in their channels such quantities of ores that they have been obstructed, and that, therefore, in reality a species of mineral vein has thus been formed, or whether their extinction is due to the same cause prevailing in other geyser regions, the building up of their channels to such a height that the higher pressure gradually renders the ascent of the water at this point more and more difficult, and finally makes it impossible. If this is the case, as I am lead to believe by analogy, then the ores will only be found in the deposits of sinter about the mouth of the springs and not in their underground channels. American enterprise will certainly take hold of this question, because it seizes every means to hunt up and raise underground treasures, as is shown by the latest experiments to discover ore bodies by ascertaining the existence of underground electrical currents, which was tried at an earlier date unsuccessfully in the vicinity of Freiberg.

As a summary of the observations thus far made, it results that no proof has been furnished of the formation of ore veins by ascending springs in California. The ore deposits created by the united action of solfataras and sinter springs at Sulphur Bank may be compared with a stockwerk, so far as its outer form is concerned, and this Stelzner does. But only so in reference to its form. It is not admissible to make any further comparison, for instance, with the stockwerk of Altenberg, a lithunite granite, altered by the decomposition of lithion mica to chlorite and tinstone, of felspar to kaolin and quartz, the granite being traversed in different directions by quartz veins, which contain the products of the alteration and of the leaching of the rock. It is not admissible, because in this case there is neither clay showing an acid reaction, nor free sulphur with sulphides of the metals in an exclusively siliceous gangue, and because in this case, as in the case of similar tin stockwerks, there should not be a trace of fluorspar if they had come in contact with the gases of a solfatara, or with thermal springs carrying a large quantity of sulphur. That modifications of the ascension theory that assumes the deposition of ores, not by ascending mineral springs, but by metallic fumes, may be still held by one or the other geologist, but it is rejected by an overwhelming majority. I may, therefore, abstain from discussing it, because I do not know of any deposit to which it is applicable.

If the only region in which it was thought safe to assume contemporaneous filling of fissure veins by ascending mineral springs furnishes no absolute proofs for such an assumption, the question may well be asked, what other theory remains? According to my opinion, only the leaching of the country rock by waters that have percolated through it and deposited the substances dissolved as ore and gangue in fissures existing either in the same country rock, or, in exceptional instances, in other rocks not far from them. This is the so-called lateral secretion theory in its simplest form, and it is to this theory that many years of observation and research have pointed so unmistakeably that I am forced to look upon it as being a valid one in the case of most mineral veins. It is not new by any means, because it was pronounced the most natural by Delius, Gerhard, and Lasius, and G. Bischof proved its correctness for the gangue, but unfortunately he did not seek for the elements of his ores in the country rock. In reference to this he only gave utterance to the following:—"Though it may be ever so probable that the metals of the sulphide ores are present in the country rock as silicates, there is no certainty on this point." His example could not help having a certain, although not a sufficiently great influence upon the views of Breithaupt and B. von Cotta. Both felt that the discovery of the elements of the ore veins in the silicates of the adjacent country rock would render the ascension theory superfluous, as the following sentences prove. Breithaupt (p. 119) says, "Several incontestable facts speak for the correctness of the theory that the elements of the minerals have travelled from the country rock into the veins;" and he instances the fact that "veins which cut through different rocks are different in each country rock"—an observation which I found confirmed hundreds of times, and which induced me to follow up the subject. He mentions the observation he heard made by "experienced and intelligent miners," that veins are richer when and where the country rock was more or less decomposed and "mild." Almost as frequently he heard the saying, found by me after long experience to be generally correct, that "in fresh, undecomposed rocks, veins do not do well." Then follow excellent observations on tin veins, and the important statement "that ores occur in rock both sprinkled in, like porphyry, and in veins in them, and they more than any speak in favour of the lateral secretion theory." At the end of the chapter, in which, however, the traditions of the ascension theory occasionally play him tricks and confuse him, Breithaupt (p. 123) speaks of the opinions expressed by G. Bischof as follows:—"I am glad to state that my convictions agree with many, though not with all, of his assumptions."

B. von Cotta takes similar ground. Two of his statements in his treatise on ore deposits are so characteristic in this direction that I must quote them. They are (vol. i., p. 177)—"Where it can be assumed (this should read, where it is proved) that the elements of the contents of the vein are contained in the country rock, there is no well founded objection against the lateral secretion theory." This simple and clear statement, however, is not followed up, but is confused by other reflections, so that finally an entirely obscure impression prevails, expressed in the words—"The true origin of the elements of the vein may thereby remain partly doubtful; but it will be permitted to assume it to be in the unknown depth rather than in the known surface." "Why" is not discussed by Von Cotta. His remarks on the Schemnitz veins are more interesting still. "If anywhere, it appears that in these cases the country rock furnished the principal constituents of the veins. The solutions flowing through them for a long period may have brought with them a few constituents, but most of the substances which they deposited they appear to have derived from the country rock, and particularly from the fragments of it filling the wide fissures. Thus at the same time, they caused their strong decomposition and the deposition in the fissures between them of the gangue and ores. If such is the case, then it will be natural to believe that the gold and silver in these veins is derived from the propylite, its regular country rock; and that, therefore, these metals were present in it originally, though in a very finely distributed state. The point would be to prove their presence. Such a proof would possess a theoretical value, but would be of little interest from a practical point of view, because, probably, the metal is so finely distributed that its extraction from the country rock could not be thought of. Here as elsewhere natural processes have probably aided mining considerably by concentrating the metallic substances" I propose to return to the Schemnitz veins further on. B. von Cotta has keenly felt how great was the importance to the lateral secretion theory of the proofs furnished, independently of Bischof, by Forchhammer, that the heavy and the precious metals can be traced in a pound of different rocks, chiefly of Scandinavian origin. Bischof, curiously, has not appreciated the value of this work. I presume that the reason was, that Forchhammer had shown the existence of these elements in ores not in specified silicates, but only in the powder of entire mass of rocks, which, besides, were not the country rock of mineral veins. The believers in the ascension theory were, therefore, at liberty to assume that these substances were present in the rocks analysed by Forchhammer as "unfiltrated sulphides," which, according to their views, were carried up as solutions by springs, and had entered the country rock from fissures as so-called "impregnations."

Therefore, no certainty had been reached concerning the part which the country rock plays in reference to the ores of mineral veins, because Bischof's work ceased at the critical point, and Breithaupt and Von Cotta did not carry out any such investigation on a broad basis, although it is certain that they must have been convinced that the country rock ought to be investigated chemically. This can only be explained by assuming that they attached too great an importance to the analyses of the Freiberg gneiss, felspar, and mica made by Scheerer, excellent in their way but made of too small quantities of the material. Both of them believed the ores and gangue to be intrusive, because these analyses showed no heavy or precious metals or metalloids. For the same reason I was also a believer of the ascension theory until 1873, because it alone appeared to explain the filling of mineral veins in most cases, in spite of the fact that my attention had been called, at an earlier date, to many phenomena for which a simpler explanation sufficed. (As early as 1852, in describing the geology of the vicinity of Weilburg, I gave expression to the view that the copper veins in the diabase of the Lahn and Dill were the result of the concentration of the copper detected in that rock, and of the products of the decomposition of the diabase (dolomite and calcite), and called attention to the experience of the miners that the Cypridinus slates cut off these veins.)

* Translation of the first chapter of Untersuchungen über Erzgänge (Wiesbaden: Kreidel), New York Engineering and Mining Journal.

THE GOLD FIELDS AND GENERAL RESOURCES OF BRITISH COLUMBIA.

An interesting paper upon this subject, by the Hon. HENRY HOLBROOK, of New Westminster, B.C., late Chief Commissioner of Lands and Works, M.L.C., was read at the usual monthly meeting of the Liverpool Geological Association, on Monday evening, the President, Mr. HENRY BRAMALL, M.I.C.E., occupying the chair. The author stated that as the wave of emigration was now setting towards British Columbia he wished to draw attention to the gold mining industry of that colony, and more especially to the facilities existing there for hydraulic gold washing, and to the large profits derived from similar undertakings in California. The metalliferous deposits—gold, silver, and copper—of British Columbia were, it was pointed out, similar in character to those of California, and lay in the same geological order. The abundance of gold in the colony was sufficiently proved, but hitherto, owing to the want of ready open communication with the country, its resources have lain dormant. The Canadian Pacific Railway—established mainly at the instigation of the Right Hon. Sir John A. Macdonald, Minister of the Interior—was, however, approaching completion, and when opened there was little doubt that an important impetus would be given to the general industries of the colony, of which the gold interests may in time add a new feature to the commerce of Canada. British Columbia as yet was not fully explored.

The discovery of gold in the colony in 1858, at Nicomen, on the Thompson river, led to further explorations, which resulted in gold blue lead being found to extend from the head of the Gulf of California, through California and Oregon into British Columbia, where it was traced as far as Camboo. The country fitted for hydraulic gold washing embraced a vast region, and had untold riches. It commenced below Hope, on the Fraser river, and extended up the Thompson and Bonaparte rivers to the head of the great Shasmop Lake, a distance of 250 miles, to which may be added all the country from Lytton and Quesnelle river, where existed abundance of water and fall, both so essential for the purposes of hydraulic washing. No difficulties were likely to arise as to obtaining water, and the remarkable cheapness of this system of gold mining—hitherto chiefly confined to California, where it had met with its great success—was fully demonstrated. The lecturer expressed the opinion that at no very distant date an amazing yield of gold from Canadian British Columbia would be forthcoming annually. Silver had not yet been found very abundantly. Iron was found in Texada Island, and large deposits of native copper occurred on the mainland, but they had not been yet worked to any extent. Valuable gold deposits existed in Vancouver Island, where two mines were open.

The agricultural lands, where not timbered, it was shown produced 35 bushels of wheat to the acre. An important branch of industry was that of salmon canning, about 200,000*l.* worth of salmon being put up annually. Another special feature of the colony was the magnificent timber produced there. The Columbian pines commanded the best prices in the American lumber markets. In conclusion, the author referred to the energy, kindness, warmheartedness, and loyalty displayed by the inhabitants of British Columbia, which, together with the temperate climate and the remarkable natural resources, indicated a future era of great prosperity to the colony, which had not inaptly been named Golden Province and Garden of the Dominion of Canada. At the close of the paper a hearty vote of thanks was awarded to the author.

THE COAL TRADE.

Mr. J. B. SCOTT, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London by sea, railway, and canal during April, 1884:—

IMPORTS.

By Sea.	Ships.	Tons.	By Railway and Canal.	Tons. cwt.
Newcastle	140	131,697	Lond. & N.-Western	118,018 7
Sunderland	106	76,945	Great Northern	93,615 0
Seaham	35	22,453	Great Western	97,187 0
Hartlepool	43	20,334	Midland	163,373 0
Middlesborough	—	—	Great Eastern	7,706 12
Scotch	4	2,524	South-Western	6,4.0 15
Welsh	36	33,025	South-Eastern	2,435 12
Yorkshire	18	4,650	Grand Junction Canal	822 0
Small coal, cinders	15	5,159		
Colonial	1	38		
Total	398	296,925	Total	552,568 6
Imports—April, 1883	427	330,996	Imports—April, 1883	582,126 14

Comparative Statement, 1883 and 1884.

By Sea.	Ships.	Tons.	By Railway and Canal.	Tons cwt.
Jan. 1 to Apr. 30, 1884	1842	1,417,717	Jan. 1 to Apr. 30, 1884	2,230,111 18
Jan. 1 to Apr. 30, 1883	1730	1,413,760	Jan. 1 to Apr. 30, 1883	2,251,677 10
Increase—1884	112	33,957	Increase—1884	21,565 12

EXPORTS.

Railway-borne coal passing "in transitu" through district		Tons 83,264
Sea-borne coal exported to British possessions, or to foreign parts, or to the coast	85,925	
Ditto sent beyond limits by railway	24,317	
Ditto by canal and inland navigation	1,785 =	112,027
Railway-borne coal exported to British possessions, or to foreign parts, or the coast	35,685	
Ditto by canal and inland navigation	410 =	36,095
Sea-borne coal brought into port and exported in same ships		473
Total quantity of coal conveyed beyond limits of coal duty district during April, 1883		236,864
Ditto, during April, 1883		233,956

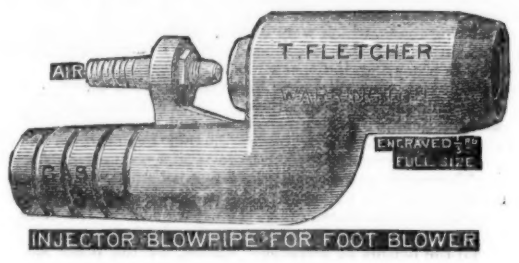
Comparative Statement, 1883 and 1884.

Total distribution of coal from Jan. 1 to April 30, 1884	1,011,767
Total distribution of coal from Jan. 1 to April 30, 1883	924,073
Increase in the present year	69,694

General Statement, 1883 and 1884.

Increase in coals exported during present year		69,694
Deduct { Increase in coals imported (sea-borne)	33,957	
Deduct { Less decrease in coals imported (railway and canal)	21,565 =	12,392
Total decrease in trade within the London district during present year		57,302

NEW INJECTOR BLOW-PIPE.



The ingenious forms of gas apparatus, designed and introduced by Mr. THOS. FLETCHER, of Warrington, have frequently been referred to in the *Mining Journal*; and the instrument represented in the above engraving is likely to prove one of his greatest practical successes. It is a new system of blow-pipe for repairs of machinery without the necessity for pulling down and re-erecting. It will be seen that it works as an injector, and takes Fletcher's No. 5 foot blower, which supplies about one-fifth the air necessary, the remainder being pulled in by the momentum of the air from the blower. That represented will burn at full power 300 cubic feet per hour, requiring a 1½ in. main to supply it. In a trial a few days since they got up a good brazing heat on a T-joint in a 3 in. bore wrought-iron pipe in five minutes from the time of starting. The same blow-pipe will also be made in the usual form to take a supply from a smith's bellows without injector, and in this form it has the same power. Mr. Fletcher believes these to be the most powerful blow-pipes which can be made to work by any blower not driven by power. At an emergency two or more can be used at once with separate blowers on the same point. The blow-pipe never gets hot, and can easily be held in the hand although it is so small. Weight has been kept down for the convenience of holding and handling; but they can easily be fixed on a stand if necessary.

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No fall required for dumping tailings Depths of rivers, floods, and other difficulties entirely surmounted. 600 tons a day raised, dispersed, washed, and dumped per day for 3d. a ton by smallest plant, 1200 tons by second size plant at 2d. per ton.

See *Mining Journal*, 19th January and 16th February, 1884, on THE CHEAPEST METHOD OF TREATING AURIFEROUS ALLUVIALS.

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WANTED, investors in B Syndicate, composed of 750 Shares of £10.

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BRITISH MINING ENTERPRISE IN TURKEY.—No. II.

The Souback and Catir Alan Mines are situated at about 15 miles west-north-west from the town of Karahissar, in the Dérékeuy Valley, and are held by the Souback and Catir Alan Mining Company (Limited) under a concession for 99 years from January, 1871, subject to an annual rental of 2*l.* 14s. and a royalty of 5 per cent. There are three mines in the area of the concession (which extends nine miles by 2½ to three), two of which Souback and Catir Alan, have been laid open; the third, Dérékeuy, has only been examined, and there are as many as 20 other lodes which have not yet been examined. The mine of Souback is on the southern spur of a mountain, on the east of which runs the Dérékeuy River, and on the west the stream of Souback. It yields lead-silver blended with gold. The mine of Dérékeuy is half an hour up the valley of the same name, and that of Catir Alan an hour and a half further up; both of them are lead-silver. The strata of the mining district, as well as the surrounding country, consists of basalt, porphyry, felspar, gneiss, and various other micaceous rocks of a very congenial character. These mines were discovered some 15 years ago by a certain Tatos Serdjanian, an Armenian of Karahissar, who conveyed samples of the ore to the late well-known Mustafa Fazil Pacha. Owing to his powerful influence at Constantinople, the latter obtained a concession for no less than 45,000 deunums, about 24 square miles, an area four times that usually granted in concessions of mines in Turkey.

It would seem, however, that even before the firman was obtained the Souback Mine was worked, for some time on account of Mustafa Fazil Pacha, and, if the accounts of the natives are to be credited, with great profit by the same Hadji Hafouz of Karahissar, who from 1838 to 1858 was connected with the Lidjessy Mine. Be this as it may, regular mining work was only commenced by the late Mr. Louis Merton, a banker in Paris and London, and up to his death continued by another French gentleman, Monsieur Baudouy, of Constantinople, until his death, when the property reverted to the heirs of Mustafa Fazil Pacha. But operations do not seem to have ever attained great proportions under the management of both these gentlemen, only 5500*l.* having been expended by them. The concession, with all its rights, was transferred in the year 1880 to the Souback and Catir Alan Mining Company, for the sum of 214,993*l.*, payable as to 15,000*l.* in cash, and as to the remaining 119,993*l.* in fully paid-up shares; seven shares being allotted to the subscribers of the Articles of Association. They issued 60,000*l.* in 6000 bonds of 10*l.* each, bearing interest at the rate of 8 per cent. per annum, the capital to be payable in 15 years. But only about 1000 of the bonds found purchasers. It is with the capital of about 10,000*l.* thus raised that the Souback Mine, the only one explored by the present company, has been worked for the last two years, but for a considerable portion of that time on a very reduced scale. Nevertheless a large amount of unproductive work has been done, such as making roads, which were of absolute necessity, the country being very hilly and the levels inaccessible; in erecting needful buildings; in procuring indispensable machinery; and also in exploring and laying open the lodes, for which purpose about 1400 ft. of levels or galleries have been driven. And I must say that all the work has been done with the greatest care and economy.

The required capital for carrying on further explorations is said to have been lately procured by the issue of 30,000 shares of 1*l.* each, out of which are also to be repaid the bonds of 1880. Mr. Austin, the general manager, is expected here in the course of the next month to make final arrangements. The spur on which the Souback Mine is situated is at 4400 ft. above the level of the sea, and at 800 ft. from the bottom of Dérékeuy Valley, on the other side of which rises the mountain of Sokhoontépé, at an altitude of 1600 ft. There are lodes on the eastern as well as on the western side of the spur, a distance of about three-quarters of a mile in a straight line. They run from south-south-west to north-north-east, and consist, on the east, of four distinct lodes, varying in size from 6 in. to 6 ft.; some of them are rich in silver ore. Hitherto little work has been done on this side. Each of the lodes has been laid open for a distance of from 10 to 15 fathoms; a fifth level, 12 fathoms in length, has been driven in the east end lode of the valley to join on the west side of the spur, the main lode of which is supposed to be the extension. Work has especially been carried on on the western side of the spur, where there is a single lode branching off into two distinct veins, going by the name of Camus and Cosmas. Three levels have been driven in, from top to bottom, at about 70 ft. from each other. Level No. 1 has two galleries, the first extends 50 fathoms with cross-cutting of 10 fathoms, the second 30 fathoms. Level No. 2 is 30 fathoms in length, not including 20 fathoms driven as a cross-cut to the west side. Level No. 3 runs 16 fathoms, and is being driven as a cross-cut to the north-east. Two of these levels communicate with each other by shafts, and the other will do so shortly. Level No. 3 is to be for the present the main adit level, which at a later period is to be carried lower down, for which purpose a tramroad has already been traced out. This is the champion lode and Cosmas branch. the richest of the two veins. The ore is lead, with a great proportion of silver blended with gold. An assay made at the Lidjessy Mine with ore from this lode gave 1500*l.* silver, independent of the gold, the value of which they could not fix.

I am assured that some samples have yielded as much as 8000*l.* per ton, and that native gold was even discovered. Unluckily this exceedingly rich ore is met with in a very small quantity. The average price of the ore from this lode or vein is valued at 60*l.* per ton. Ore extracted when I was at Souback gave an assay the value of 120*l.* Furthermore the veins are not continuous, but extend in ramifications, and often break off to reappear at a distance. It is hoped, however, that as further progress is made towards the centre of the spur, no interruption will occur in the veins, and that they will become richer in silver and gold. The rock is not very hard, and the richest part of the ore is found in the pipe-clay, white or grey, and in the soapstone, in which the harder veins are embedded. A main cross-cut, or Ste. Barbe, is being cut at 700 ft. from the top, and at the south end of the spur. It already extends about 50 fathoms, and is provided with rails. The tramroad, which has been traced out from the western side of the spur, runs round it so far as the most distant level in the valley of Dérékeuy, at the bottom of which is being erected a dressing-floor, to include furnaces, smelting being in the projects of the company. A stone-breaker (Marsden's), which, owing to the want of a carriage road, had to be specially manufactured in pieces not heavier than a mule's load, is being mounted. as is also a set of Handycroft's jiggers. A turbine of 8-horse power is now ready for work. The buildings for another of 12-horse power are being got ready, and the machinery for it is expected shortly to arrive. The stream of Dérékeuy gives at present 15-horse power, but can be increased to 40 or 50-horse power by the erection of a dyke at about 500 yards. It is hoped than when the machinery is ready the company will be in a position to work the mine on an extended scale, and that large returns will be realised. And provided that sufficient capital is at hand to carry on regular work, there is no apparent motive why this favourable result should not be attained. The Souback Mine is in its infancy, and, according to the sanguine expectations of the underground agents on the spot, may prove a great success.

The Catir Alan Mine, which is situated on the eastern side of the Dérékeuy Valley, consists of three lodes, for the development of which nothing has yet been done by the present proprietors. In one of the lodes, the only one laid open, there are three levels, the principal of which is at an elevation of 1600 ft. above the Dérékeuy river. It is in rather hard basaltic rock, and has been driven some 8 or 10 fathoms through ground that will yield several tons of blende and silver-lead ore per fathom, valued as likely to fetch about 14*l.* or 15*l.* per ton. The Dérékeuy lode, which is situated in the same valley, has merely been examined for a few yards. The engineer of the Lidjessy Mines, who has visited it, pronounces the quality of the ore to be equal, if not superior, to that of their own mine. The area of the concession is so extensive, and the lodes in it so numerous, that there is work for more than one mining company. The ore hitherto extracted from the Souback Mine and sent to Great Britain amounts to about 45 tons. The present return is about ½ ton per day. Dressed ore fetched in British markets from 18*l.* (eastern lodes) to 100*l.* per ton. It would seem that a few months back 240 okes (6 cwts.) were sold, without being dressed, just as they were extracted from the western levels, at the rate of 400*l.* per ton. The ore is forwarded in deal boxes, containing 1 cwt. each, as giving less loss in weight.

The number of hands employed at present, underground and on surface, does not exceed 100. Miners work by contract, and get from 180 pias. to 400 pias. (1*l.* 10s. to 3*l.* 6s. 8d.) per fathom, according to the hardness of the rock. Other labourers receive from 5 pias. to 6 pias. (10d. to 1s.) per day; boys from 2 pias. to 4 pias. (4d. to 8d.); skilled workmen from 10 pias. to 18 pias. (1s. 8d. to 3s.). Except for the last class, labour is cheaper here than at Lidjessy, but transport to Kerassond or Ordoo is much dearer. According to the season 4 pias. to 6 pias. are paid per batman, or 6 okes, or from 4s. 4d. to 6s. 6d. per cwt. The question of a road to Ordoo, the nearer point on the coast of the Black Sea, was the first to attract the attention of the company, whose engineer surveyed the country for the purpose. But there being now a route from Kerassond to Korahissar, which is already carriageable in part, and may be totally so next year, the great outlay that the company had to incur is no longer required. It is true that the Souback and Catir Alan Mines have not the advantage to be, like the Lidjessy Mine, situated in the very highway; but instead of a line of upwards of 100 miles, which their project included, a branch road of only 15 to 20 miles may join the mines to the Karahissar-Kerassond route, or to any more convenient point on the road which is in construction at Ordoo, and is to be pushed from Melet to Karahissar. The mule track between the latter and Souback mostly runs on flat ground, but from the summit of Sokhoontépé to the valley of Dérékeuy there is a very steep descent, excluding the idea of a carriage road. However, the difficulty can be evaded by the branch road from the mines running through a gorge which is on the south of Sokhoontépé, and does not present insuperable difficulties.

The offices and officers which at present are close to Cosmas' lodes, and required to be enlarged, are likely to be transferred in the valley in the vicinity of the dressing-floor and smelting-works. The staff at the time of my visit consisted of:—One agent (Italian subject), one civil engineer (British subject), one underground engineer and chief foreman (British subject), one underground engineer and dresser (British subject), one accountant and cash-keeper (British subject), one interpreter and assistant (British subject), one storekeeper (Italian subject); a surgeon and a smelter were shortly expected out. The valley of Dérékeuy is far from being so barren as that of Assardjik, but the climate is said not to be as healthy here as at Lidjessy.

LARGE DIAMOND.—Although diamonds are at present somewhat of a drug on the market, a stone thrice the size of the Koh-i-noor in its recent state ought to be saleable. Mr. Bryce-Wright states that a digger in South Africa has found a diamond measuring 1¾ in. in length, and 1¼ in. in diameter, weighing 302 carats. It is a perfect octahedron in shape, and of the usual "Cape" or "off" colour. It is reported that 3000*l.* have been refused for it in its uncut state. If the stone be, as reported, a perfect octohedron, and free from flaws, it ought to cut into a good brilliant of 1½ oz. in weight, whilst the Koh-i-noor weighs but two-thirds of an ounce.

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The circulation of such a book as this must necessarily be limited. It is doubtful whether it will pay more than the bare cost of publishing, allowing nothing for the enormous amount of labour such a mass of figures has occasioned. The price cannot be named at less than 25s., and it is not too much to say that where it can be applied its cost will be saved in a few weeks. It will be found invaluable to accountants generally.
Copies can now be had, and will be forwarded from the MINING JOURNAL Office on receipt of Post Office Order for the amount.

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THE NORTH WALES COAL FIELDS.
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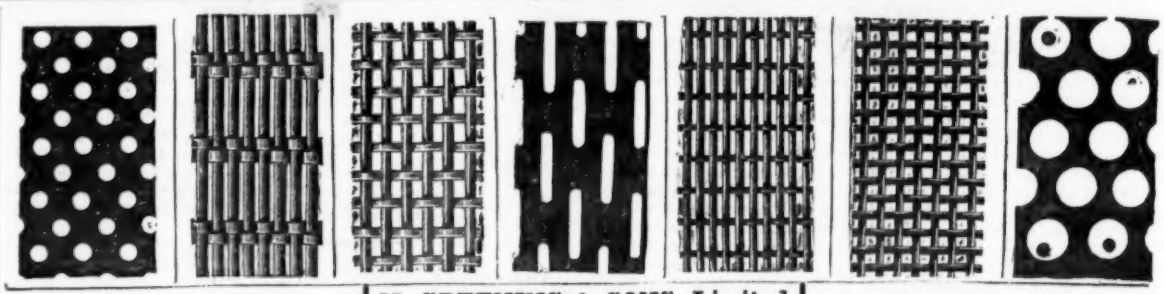

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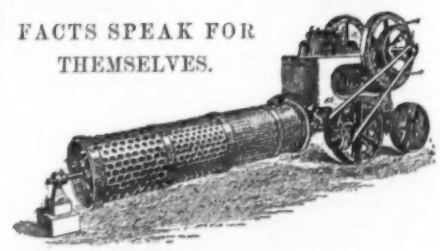

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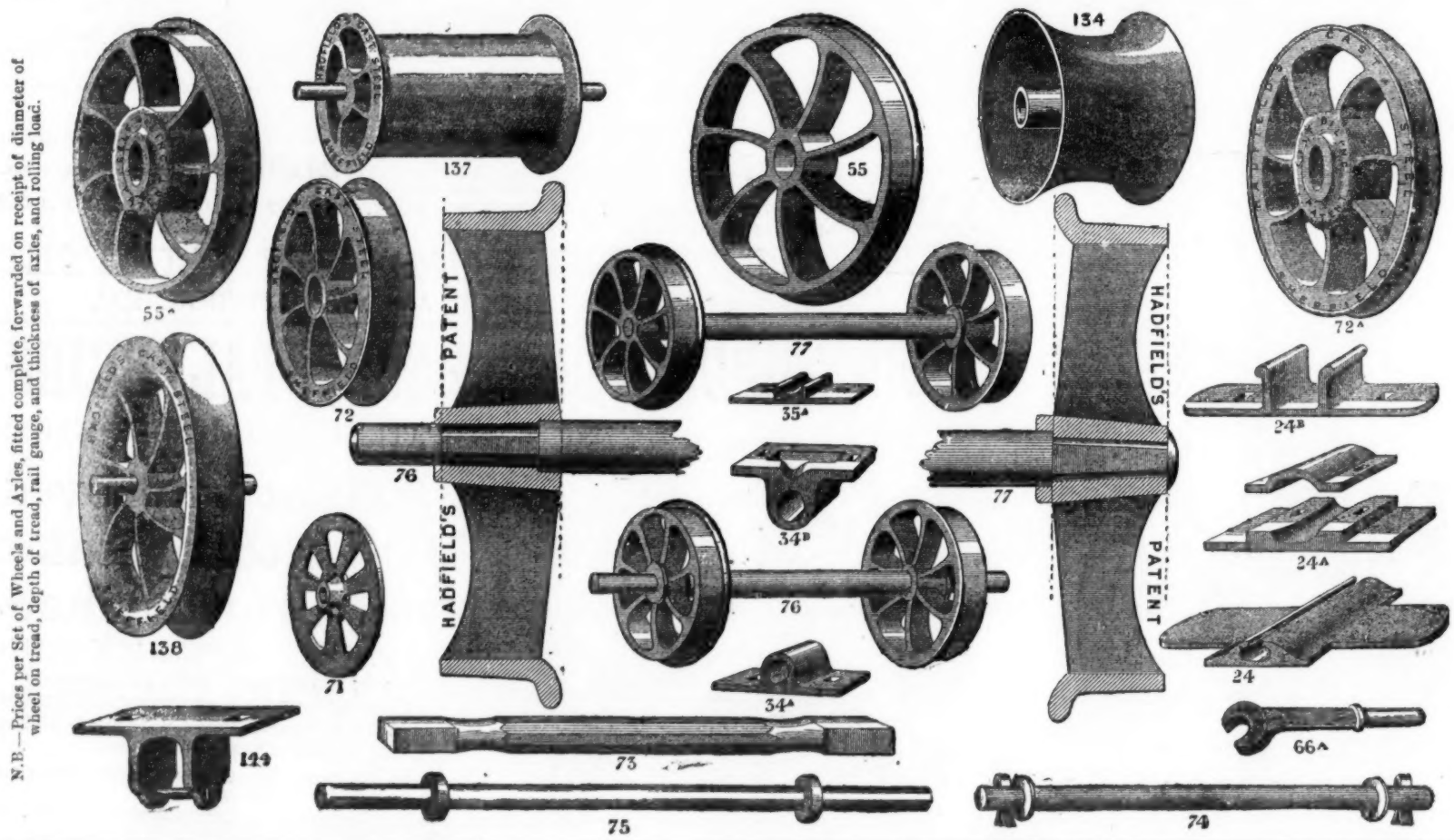

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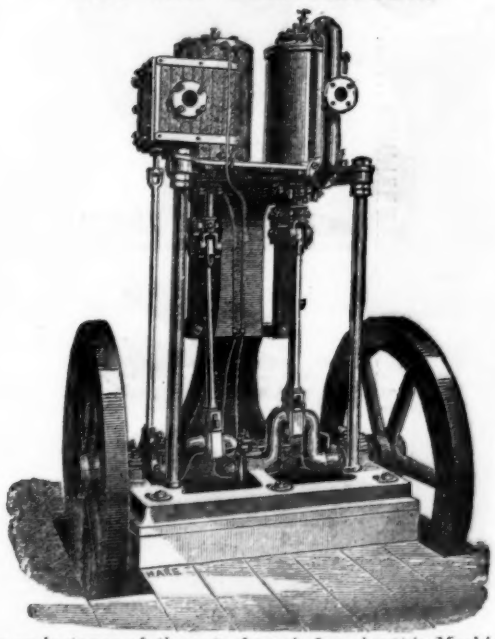

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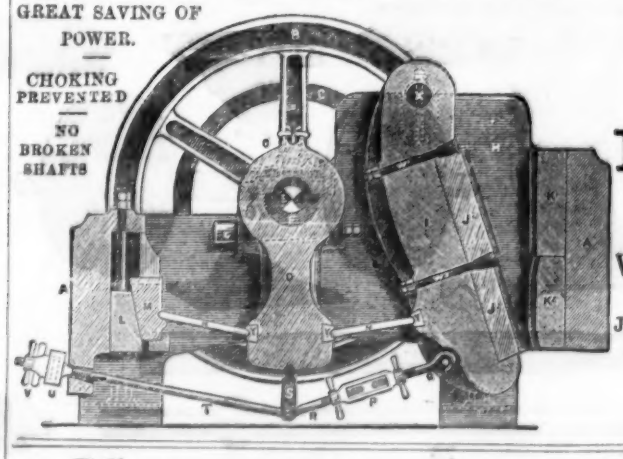

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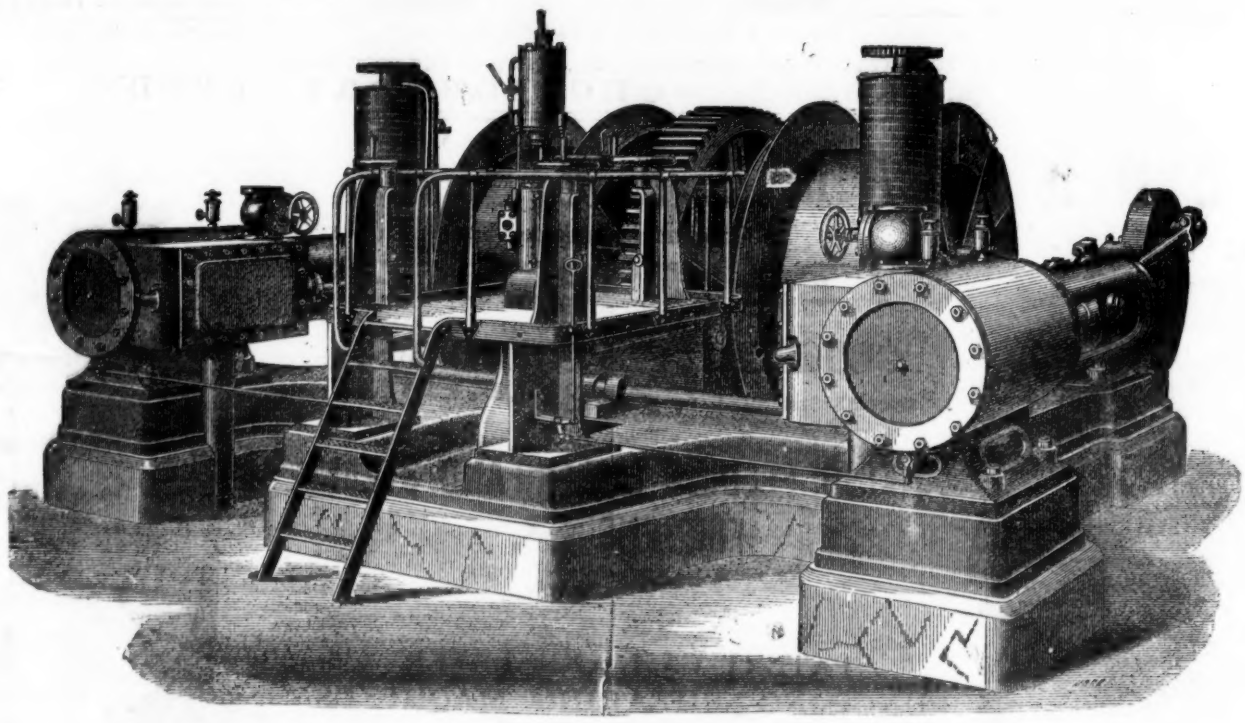

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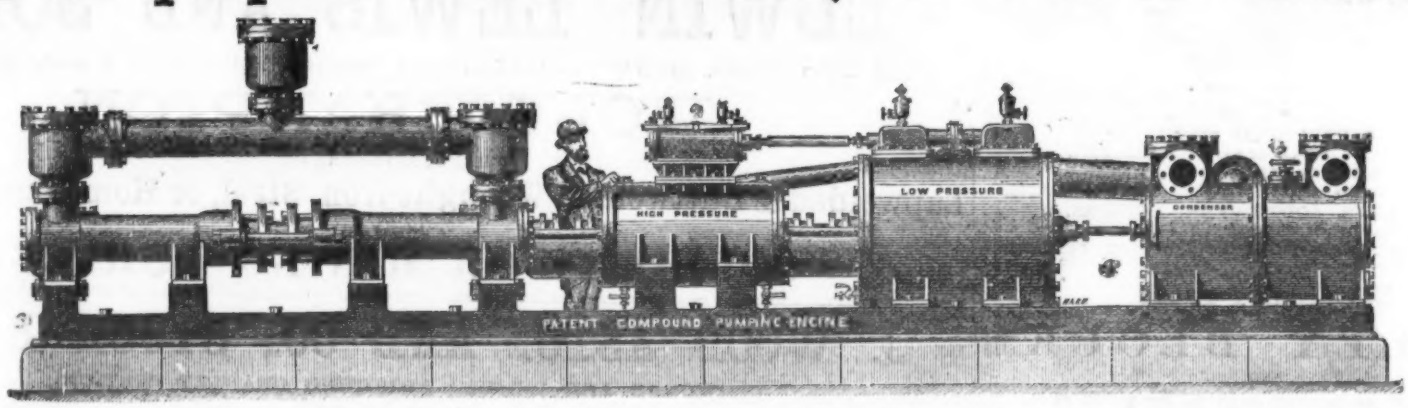

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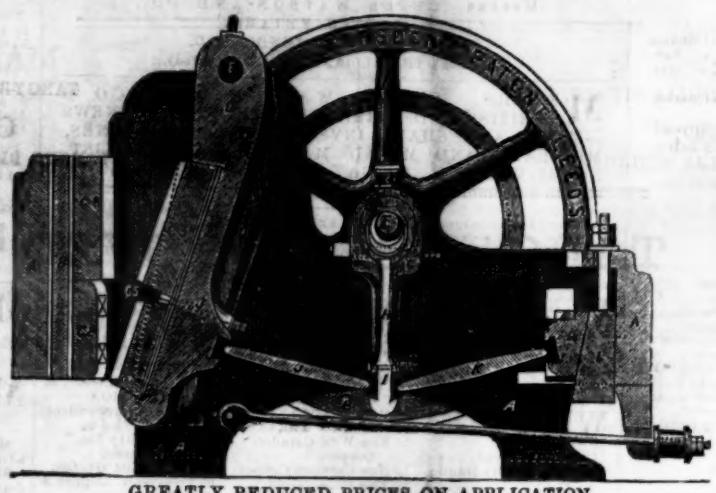

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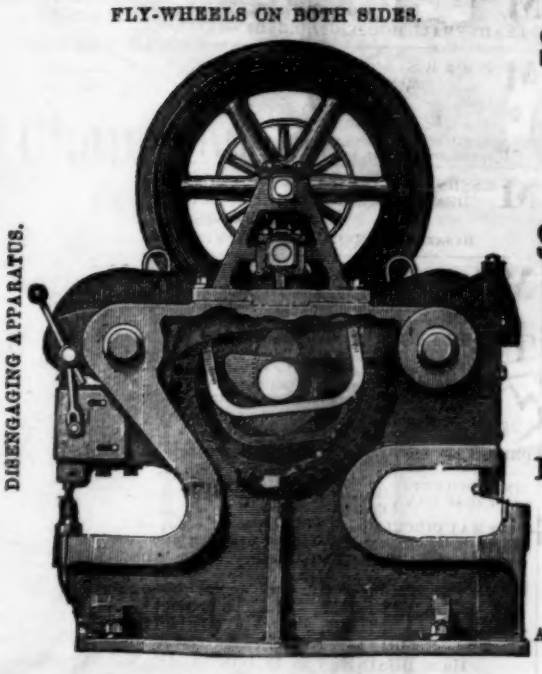

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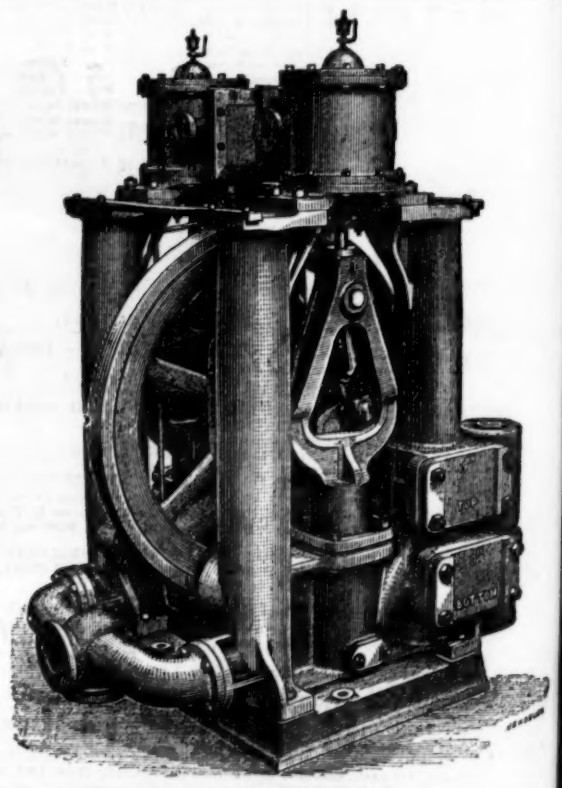

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